Appendix A. Project Technical Advisory Team

Scott Clemons
Wildlife Conservation Board
801 K Street, Suite 806
Sacramento, Ca 95814

John Ellison
Department of Fish and Game
1416 Ninth Street, 12th Floor
Sacramento, CA 95814

Scott Flint
Department of Fish and Game, Natural Heritage Division
1416 Ninth Street, 12th Floor
Sacramento, CA 95814

Richard G. Kempka
Ducks Unlimited, Inc.
3074 Gold Canal Drive
Rancho Cordova, CA 95670

Kari Lewis
Department of Fish and Game, Natural Heritage Division
1416 Ninth Street, 12th Floor
Sacramento, CA 95814

Dr. Frederic A. Reid
Ducks Unlimited, Inc.
3074 Gold Canal Drive
Rancho Cordova, CA 95670

Ruth Spell
Pacific Meridian Resources
3074 Gold Canal Drive
Rancho Cordova, CA 95670

Appendix B. Metadata

Wetlands and Riparian GIS

CDFG WETLANDS AND RIPARIAN GIS - METADATA

COVERAGE/IMAGE LAYER NAME: wet_rip_gis.img

COVERAGE/IMAGE DESCRIPTION:
The Wetlands and Riparian GIS database was developed to inventory wetlands, riparian woody areas, and surrounding landcover in three key regions in California: 1) the Sacramento Valley, 2) the San Francisco Bay/Delta, and 3)the San Joaquin Valley to support cooperative conservation planning and wetland resource protection efforts of state, federal, and local agencies and private organizations. This database was produced using image processing techniques to classify satellite imagery. For the three regions, Landsat Thematic Mapper satellite imagery was processed to map land cover classes from three broad categories: wetlands, agriculture, and uplands.

A cooperative grant from the Department of Fish and Game (using funds from the U.S. Environmental Protection Agency), the Wildlife Conservation Board, the Resources Agency of California, and the U.S. Bureau of Reclamation funded the development of this GIS database by Ducks Unlimited, Inc. and their subcontractor Pacific Meridian Resources in cooperation with DFG, WCB, and BOR staff.

COVERAGE/IMAGE TYPE: Raster

COVERAGE/IMAGE FORMAT: Erdas IMAGINE 8.2

COVERAGE/IMAGE SIZE:
No. Rows: 19071 No. Columns: 13189
Megabytes: 31 Mb

COVERAGE/IMAGE BOUNDARY:
Upper Left X: 496860 Upper Left Y: 4453200
Lower Right X: 892500 Lower Right Y: 3881100

COORDINATE SYSTEM DESCRIPTION:
Projection: UTM Zone 10
Units: 30 meter pixels
Datum: NAD27
Spheroid: Clark 1866

SOURCE: Natural Heritage Division, California Department of Fish and Game

SOURCE DATA: Landsat Thematic Mapper Satellite Imagery and SPOT Multispectral Satellite Imagery. The sensor and dates of image acquisition are listed below.

Area	**Summer**	**Winter**
Sacramento Valley	Landsat TM 6/28/93	Landsat TM 1/3/93
San Francisco Bay/Delta	Landsat TM 6/28/93	Landsat TM 1/3/93
N. San Joaquin Valley	Landsat TM 7/7/93	Landsat TM 11/9/86 and SPOT 11/13/90
S. San Joaquin Valley	Landsat TM 6/30/93	Landsat TM 12/20/92
Vina Plains	Landsat TM 6/28/93	Landsat TM 1/3/93

DATA DICTIONARY:
The items listed in the image Attribute Table are listed below:

Row - data value representing each class in the image file.

Class Names - name of landcover class.

SFEI Class - class name as labeled by the San Francisco Estuary Institute Baylands Atlas data. This class was included to provide a label of tidal or diked to all wetlands in the Bay area.

Histogram - Number of pixels in each class.

Color - color of the class as displayed in the image.

Opacity - sets the visibility of the class. Settings range from 0 (totally transparent) to 1 (fully visible).

Acres - Total acres of each class

Hectares - Total hectares of class.

Descriptions of each of the categories in the classification system are listed below.

1. Open Water - Open water features (both fresh and salt water) that were identified on the summer image only.

2.1.1 Seasonally Flooded Estuarine Emergents* - emergent vegetation identified as: a) dry (i.e. no flooding or moist soil) on the summer image, b) inundated on the winter image, and c) within areas classified as Estuarine by the National Wetlands Inventory. Examples of estuarine emergents are pickleweed and saltgrass. This class may include areas which are subject to freshwater runoff or managed by means of fresh water flooding and support brackish or freshwater habitats, such as areas of Suisun Marsh.

2.1.2 Permanently Flooded Estuarine Emergents* - wetland emergent vegetation identified as: a) flooded or having moist soil on the summer image and thus assumed to also be flooded or moist in the winter, and b) within areas classified as Estuarine by the National Wetlands Inventory. Examples of estuarine emergents are pickleweed and saltgrass. This class may include areas which are subject to freshwater runoff or managed by means of freshwater flooding and support brackish or freshwater habitats, such as areas of Suisun Marsh.

*Areas labeled as Estuarine which are managed for brackish or fresh water habitat can vary in seasonality of flooding and in geographic location and extent based on varying management schemes.

2.1.3 Tidal Estuarine Emergents - wetland emergent vegetation identified within areas classified as Tidal by the San Francisco Estuary Institute Baylands Atlas data and classified as Estuarine by the National Wetlands Inventory. Examples of tidal estuarine emergents are pickleweed and saltgrass.

2.2.1 Seasonally Flooded Palustrine Emergents** - emergent vegetation identified as: a) dry (i.e. no flooding or moist soil) on the summer image, b) inundated on the winter image, and c) within areas classified as Palustrine, Lacustrine, or Riverine by the National Wetlands Inventory or outside of any areas classified as Estuarine by the National Wetlands Inventory. This class includes areas that were managed as moist soil habitat for waterfowl. Typical vegetation includes swamp timothy, pricklegrass, and watergrass.

2.2.2 Permanently Flooded Palustrine Emergents** - wetland emergent vegetation identified as: a) flooded or having moist soil on the summer image and thus assumed to also be flooded or moist in the winter, and b) within areas classified as Palustrine, Lacustrine, or Riverine by the National Wetlands Inventory or outside of any areas classified as Estuarine by the National Wetlands inventory. Typical vegetation in this class includes bulrushes and cattails. Managed wetlands where summer water was visible were included in this class.

**Managed areas labeled as seasonally or permanently flooded palustrine can vary in seasonality of flooding and geographic location and extent based on varying management schemes.

2.3 Flats - includes tidal flats, mud banks, and sand bars that were visible above the water level on the summer image.

3.1 Flooded Agriculture - Agricultural lands where standing water or very moist soil was present on both the winter and summer images. This includes immature rice fields where the rice plant was not yet fully emergent above the water on the summer image and were inundated on the winter image.

3.2 Seasonally Flooded Agriculture - Agricultural lands where standing water was present on the winter image and growing crops were present on the summer image. Mature rice fields and other crops with winter flooding regimes were included in this class.

3.3 Non-Flooded Agriculture - Agricultural lands with growing crops present in the summer and no flooding detected on either the summer or winter image. Row crops and other non-flooded agriculture were included in this class.

3.4 Orchards/Vineyards - Orchards include almonds, walnuts, and various fruits grown in the agricultural areas of the Central Valley and in the valleys north of the Bay area. Vineyards are included in this class.

4.1 Riparian Woody - areas dominated by woody scrub/shrub vegetation and trees that are located within a riparian mask based on proximity to selected hydrography features from the CDFG Rivers Assessment data, NWI data, Natural Diversity Data Base (NDDB), and a hand-digitized floodplain map. The parameters used to define the mask were tailored to reflect differences in riparian forest habitats in three ecological regions found within the project area. These parameters are discussed in detail in Section 8 of the final project report.

4.2 Non-riparian Woody - areas dominated by woody scrub/shrub vegetation and trees that were not included in the Riparian Woody class. Residential areas with significant tree cover are included in this class.

5. Grass - includes managed grasslands, such as pasture, golf courses, and schoolyards, and natural grasslands such as those found in the foothills.

6. Barren - exposed soil with little or no vegetation present. This class includes fallow or recently plowed fields. Some barren land may have been classified as Other.

7. Other - includes areas of urban and suburban development, industrial complexes, commercial centers, airport runways, and other areas dominated by structures and paved surfaces. Some areas of development may have been classified as Barren.

METHODS:

The Wetland and Riparian GIS database was produced from satellite imagery using image classification techniques. A multi-temporal approach involving the use of imagery from both the summer and the winter was implemented to take advantage of the seasonal wetland characteristics which allow for a more detailed classification than characteristics observed during a single season. Ten Landsat Thematic Mapper images--a summer and winter scene from five scene locations--were acquired to cover the project area. In addition, a SPOT multispectral image was purchased for the N. San Joaquin Valley to provide a more recent winter image for the major wetlands areas than was available from the Landsat TM sensor.
Image processing techniques were used to classify the satellite images to produce the final GIS data layer. Initially, the winter image was classified to produce a digital map of winter standing water. This “winter wet” layer was then used along with Digital National Wetlands Inventory (NWI) data and Department of Conservation Farmlands Mapping and Monitoring data to stratify the summer image into three broad landcover classes: wetlands, agriculture, and non-agriculture uplands. After stratification, each image strata was classified separately using a combination of supervised and unsupervised classification techniques. Field data, aerial photography, and other ancillary data sources were used to assist in the labeling of spectral clusters.

After each of the strata was classified, they were mosaicked together and three GIS modeling operations were performed to further refine the classification. First, modeling with the "winter wet" layer was performed to identify and label seasonally flooded agriculture and seasonally flooded wetlands. Next, NWI data and SFEI Baylands Atlas data were used to apply wetland system labels (Estuarine vs. Palustrine) and a secondary Tidal attribute, respectively, to the wetlands identified during image classification. Finally, GIS modeling was performed to identify a riparian woody class. A mask of potential riparian areas was generated using NWI data, CDFG River Reach Hydrography Data, the Natural Diversity Data Base, and a manually digitized floodplain coverage. This mask was overlaid over the classified map and any woody areas falling within the mask were included in the riparian woody class.

ASSESSMENT OF DATA QUALITY:

Because of the use of multiple dates of imagery, the seasonal nature of many of the classes, and limited access to private lands, it was not possible to acquire the reference data needed for a rigorous, quantitative accuracy assessment. Instead, a review process was adopted in which persons familiar with the landcover of the project area reviewed draft maps and provided comments on problems they identified in the maps. These comments served as an important qualitative accuracy assessment and targeted systematic errors that were corrected during the final editing process.

APPROPRIATE USE OF COVERAGE/CLASSIFIED IMAGE:

The Wetlands and Riparian GIS database is designed for use in statewide and regional level planning. Due to its scale and scope, the Wetland and Riparian GIS database will meet different needs with various levels of success. Because of the relatively large scope of the database, it will likely meet the needs of coarser level planning efforts (planning efforts over a large area) with greater success than it will for finer level planning efforts, such as those occurring at the local level. For coarse level planning, the database provides information that is relatively uniform in coverage, date, and scale, useful for statewide and regional level planning. The benefits of covering a large area in a uniform manner may come at a cost in terms of accuracy in some cases. Over a large project area such as the Central Valley, it is not possible to consider all areas in great detail, and in some cases, local subtleties in cover or management may not be represented. Thus, for finer level planning, the database will likely best be used as a general baseline to focus gathering of more detailed information and to fill gaps until such information can be assimilated. The effects of error in the data are also related to the scale at which the information is used. Errors may become increasingly significant as the information is used for finer levels of analysis. Classification errors which appear minimal at the state-wide or regional level may be significant when the data are used at a finer level. These issues of scale and accuracy require consideration by those who use the database for conservation planning and resource protection analysis.

In addition, the user should be aware of several limitations of the data. First, the seasonally flooded wetlands and agriculture classes were identified using a single date
of imagery. Second, a number of ancillary data layers were incorporated into the processing either for stratification or for GIS modeling. While these layers contributed greatly to the overall accuracy of the final data base, they also may have introduced error. Finally, the riparian class was modeled based on ancillary data and proximity modeling. Thus accurate representation of riparian habitat may not have been entirely achieved.

The information contained in, or derived from this data layer is unsuited for, and shall not be used for any regulatory purpose or action, nor shall the report or accompanying maps be the basis for any determination relating to impact assessment or mitigation.

USE OF DATA FOR DISPLAY AND ANALYSIS:

To display the classified image in IMAGINE, open a Viewer by clicking on the Viewer icon on the IMAGINE main menu bar. In the menu bar at the top of the Viewer, select File ò Raster ò Open. The Open Raster Layer dialog box will appear. Input the name of the image to be displayed and turn on the Fit to Frame button under Display Options to have the image fit the maximum extent of the Viewer. Click on OK to display the image.

To view the class names and other attributes, select the Attribute Editor option under Raster on the Viewer main menu bar.

The IMAGINE format classified image can be easily converted to ArcGRID format using the following command:

arc> imagegrid <in_image> <out_grid> <out_colormap_file>

The color table from the input image will be written to <out_colormap_file>.

FOR MORE INFORMATION CONTACT:
California Department of Fish and Game
Natural Heritage Division
1416 Ninth Street
Sacramento, CA 95814
Phone: (916) 322-2493
FAX: (916) 324-0475

Satellite Imagery - Landsat TM and SPOT XS

PRODUCT=96117002-01 WRS=044/03215 ACQUISITION DATE=19930103 SATELLITE=L5
INSTRUMENT=TM10 PRODUCT TYPE=MAP ORIENTED
PRODUCT SIZE=SUBSCENE
PROCESSING=TERRAIN RESAMPLING=CC RAD GAINS/BIASES=1.05448/-.00478 2.60295/-.01088
1.63232/-.00806 2.93989/-.01866 0.68566/-.00545 1.52431/0.12378 0.42582/-.00313 TAPE SPANNING
FLAG=1/1 START LINE=1 LINES PER VOL=3730 ORIENTATION=0.00 PROJECTION=UTM USGS
PROJECTION = 9 USGS MAP ZONE = 10 USGS PROJECTION PARAMETERS= 0.637820
640000000D+07 0.635658380000000D+07 0.999600000000000D+00 0.000000000000000D+00 -
0.123000000000000D+07 0.000000000000000D+00 0.500000000000000D+06 0.000000000000000D+00
0.000000000000000D+00 0.000000000000000D+00 0.000000000000000D+00 0.000000000000000D+00
0.000000000000000D+00 0.000000000000000D+00 0.000000000000000D+00 0.000000000000000D+00
EARTH ELLIPSOID=CLARK_1866 SEMI-MAJOR AXIS=6378206.400 SEMI-MINOR AXIS=6356583.800
PIXEL SIZE=30.00 PIXELS PER LINE=3730 LINES PER IMAGE=3730 UL 1223801.5520W 403420.8190N
531000.000 4491150.000 UR 1211844.8493W 403338.5301N 642870.000 4491150.000 LR 1212013.6854W
393311.5204N 642870.000 4379280.000 LL 1223820.8419W 393352.3356N 531000.000 4379280.000
BANDS PRESENT=1234567 BLOCKING FACTOR=1 RECORD LENGTH=3730 SUN ELEVATION=21
SUN AZIMUTH=150 CENTER 1211948.7956W 400658.3714N 642297.120 4441781.973 3711 1647
OFFSET=9 REVB

PRODUCT=96117001-01

WRS=044/03215 ACQUISITION DATE=19930628
SATELLITE=L5 INSTRUMENT=TM10
PRODUCT TYPE=MAP ORIENTED PRODUCT SIZE=SUBSCENE
TYPE OF GEODETID PROCESSING=TERRAIN RESAMPLING=CC
RAD GAINS/BIASES = 1.05571/-.00740 2.60562/-.01597 1.63429/-.01190
2.94442/-.02341 0.68566/-.00558 1.52431/0.12378
0.42569/-.00320
TAPE SPANNING FLAG=1/1 START LINE=1 LINES PER VOL=3730
ORIENTATION=0.00
PROJECTION=UTM USGS PROJECTION = 9 USGS MAP ZONE = 10
USGS PROJECTION PARAMETERS=
0.637820640000000D+07
0.635658380000000D+07
0.999600000000000D+00
0.000000000000000D+00
-0.123000000000000D+07
0.000000000000000D+00
0.500000000000000D+06
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
EARTH ELLIPSOID=CLARK_1866
SEMI-MAJOR AXIS=6378206.400 SEMI-MINOR AXIS=6356583.800
PIXEL SIZE=30.00 PIXELS PER LINE=3730 LINES PER IMAGE=3730
UL 1223723.2753W 403420.6959N 531900.000 4491150.000
UR 1211806.5952W 403337.9694N 643770.000 4491150.000
LR 1211935.9900W 393310.9793N 643770.000 4379280.000
LL 12233743.1251W 393352.2167N 531900.000 4379280.000
BANDS PRESENT=1234567 BLOCKING FACTOR=1 RECORD LENGTH=3730
SUN ELEVATION=59 SUN AZIMUTH=114
CENTER 1211902.7350W 400651.6731N 643391.430 4441596.002 3717 1653
OFFSET=46
REVB

PRODUCT=94257031-01

WRS=044/03403 ACQUISITION DATE=19930628
SATELLITE=L5 INSTRUMENT=TM10
PRODUCT TYPE=MAP ORIENTED PRODUCT SIZE=FULL SCENE
TYPE OF GEODETID PROCESSING=TERRAIN RESAMPLING=CC
RAD GAINS/BIASES = 1.05575/-.00800 2.60548/-.01719 1.63379/-.01195
2.94104/-.02257 0.68416/-.00417 1.52431/0.12378
0.42523/-.00287
TAPE SPANNING FLAG=1/1 START LINE=1 LINES PER VOL=7050
ORIENTATION=0.00
PROJECTION=UTM USGS PROJECTION = 9 USGS MAP ZONE = 10
USGS PROJECTION PARAMETERS=
0.637820640000000D+07
0.635658380000000D+07
0.999600000000000D+00
0.000000000000000D+00
-0.123000000000000D+07
0.000000000000000D+00
0.500000000000000D+06
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
EARTH ELLIPSOID=CLARK_1866
SEMI-MAJOR AXIS=6378206.400 SEMI-MINOR AXIS=6356583.800
PIXEL SIZE=30.00 PIXELS PER LINE=3730 LINES PER IMAGE=3730
UL 1232427.6899W 382341.5256N 464400.000 4249500.000
UR 1205032.8888W 382232.5833N 688470.000 4249500.000
LR 1205347.2853W 362815.0628N 688470.000 4038030.000
LL 1232350.8266W 362919.4417N 464400.000 4038030.000
BANDS PRESENT=1234567 BLOCKING FACTOR=1 RECORD LENGTH=7470
SUN ELEVATION=60 SUN AZIMUTH=109
CENTER 1220331.1374W 372547.0837N 575913.837 4142688.376 3713 3361
OFFSET=46
REVB

PRODUCT=94257032-01

WRS=044/03403 ACQUISITION DATE=19930103
SATELLITE=L5 INSTRUMENT=TM10
PRODUCT TYPE=MAP ORIENTED PRODUCT SIZE=FULL SCENE
TYPE OF GEODETID PROCESSING=TERRAIN RESAMPLING=CC
RAD GAINS/BIASES 1.055451-.00794 2.60605/-.01672 1.63466/-.01232
2.94522/-.02341 0.68507/-.00492 1.5243110.12378
0.42533/-.00320

TAPE SPANNING FLAG=1/1 START LINE=1 LINES PER VOL=7050
ORIENTATION=0.00
PROJECTION=UTM USGS PROJECTION = 9 USGS MAP ZONE = 10
USGS PROJECTION PARAMETERS=
0.637820640000000D+07
0.635658380000000D+07
0.999600000000000D+00
0.000000000000000D+00
-0.123000000000000D+07
0.000000000000000D+00
0.500000000000000D+06
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
EARTH ELLIPSOID=CLARK_1866
SEMI-MAJOR AXIS=6378206.400 SEMI-MINOR AXIS=6356583.800
PIXEL SIZE=30.00 PIXELS PER LINE=7430 LINES PER IMAGE=7050
UL 1232504.5233W 382312.1952N 463509.033 42486O0.000
UR 1205200.2340W 382204.9866N 536370.033 4241500.300
LR 1205512.3923W 362747.3508N 656370-003 4037130.000
LL 1232426.845W 362850.1105N 453500.003 4037130.000
BANDS PRESENT=1234567 BLOCKING FACTOR=1 RECORD LENGTH=7430
SUN ELEVATION=23 SUN AZIMUTH=149
CENTER 1220921.5718W 372554.41584 574672.281 4142933.173 3707 3524
OFFSET=32
REVB

PRODUCT=94257033-01

WRS=044/03300 ACQUISITION DATE=19930628
SATELLITE=L5 INSTRUMENT=TM10
PRODUCT TYPE=MAP ORIENTED PRODUCT SIZE=FULL SCENE
TYPE OF GEODETID PROCESSING=TERRAIN RESAMPLING=CC
RAD GAINS/BIASES = 1.05483/-.00806 2.60175/-.01569 1.62987/-.01198
2.94276/-.02350 0.68473/-.00452 1.52431/0.12378
0.42523/-.00317

TAPE SPANNING FLAG=1/1 START LINE=1 LINES PER VOL=7040
ORIENTATION=0.00
PROJECTION=UTM USGS PROJECTION = 9 USGS MAP ZONE = 10
USGS PROJECTION PARAMETERS=
0.637820640000000D+07
0.635658380000000D+07
0.999600000000000D+00
0.000000000000000D+00
-0.123000000000000D+07
0.000000000000000D+00
0.500000000000000D+06
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
EARTH ELLIPSOID=CLARK_1866
SEMI-MAJOR AXIS=6378206.400 SEMI-MINOR AXIS=6356583.800
PIXEL SIZE=30.00 PIXELS PER LINE=7460 LINES PER IMAGE=7040
UL
UR
LR
LL
BANDS PRESENT=1234567 BLOCKING FACTOR=1 RECORD LENGTH=7460
SUN ELEVATION=60 SUN AZIMUTH=112
CENTER 3723 3519
OFFSET=57
REVB

PRODUCT =93236023-01

WRS =044/03300 ACQUISITION DATE =19930103
SATELLITE =L5 INSTRUMENT =TM10
PRODUCT TYPE =MAP ORIENTED PRODUCT SIZE =FULL SCENE
TYPE OF GEODETIC PROCESSING =TERRAIN RESAMPLING =CC
RAD GAINS/BIASES = 1.05561/-.00648 2.485/-.01689 1.63352/-.01230
2.94342/-.02208 0.68577/-.00520 1.52431/0.12378
0.42582/-.00314

TAPE SPANNING FLAG=1/1 START LINE=1 LINES PER VOL=7040
ORIENTATION=0.00
PROJECTION=UTM USGS PROJECTION = 9 USGS MAP ZONE = 10
USGS PROJECTION PARAMETERS=
0.637820640000000D+07
0.635658380000000D+07
0.999600000000000D+00
0.000000000000000D+00
-0.123000000000000D+07
0.000000000000000D+00
0.500000000000000D+06
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
EARTH ELLIPSOID=CLARK_1866
SEMI-MAJOR AXIS=6378206.400 SEMI-MINOR AXIS=6356583.800
PIXEL SIZE=30.00 PIXELS PER LINE= 7430 LINES PER IMAGE= 7050
UL 1225943.1674W 395100.0269N 500400.000 4410900.000
UR 1202329.0643W 394914.4113N 723270.000 4410900.000
LR 1202736.4222W 375500.7854N 723270.000 4199430.000
LL 1225943.6114W 375639.4967N 500400.000 4199430.000
BANDS PRESENT = 1234567 BLOCKING FACTOR = 1 RECORD LENGTH = 7430 SUN ELEVATION =22
SUN AZIMUTH =149
CENTER 1214239.1875W 385356.9756N 611789.839 4306168.387 3714 3492
OFFSET= 17
REVB

PRODUCT =94322004-01

WRS =043/03400 ACQUISITION DATE =19930707
SATELLITE =L5 INSTRUMENT =TM10
PRODUCT TYPE =MAP ORIENTED PRODUCT SIZE =FULL SCENE
TYPE OF GEODETIC PROCESSING =TERRAIN RESAMPLING =.CC
RAD GAINS/BIASES 1.05410/-.00764 2.59878/-.01167 1.62794/-.00968
2.93759/-.02254 0.68416/-.00417 1.52431/0.12378
0.42498/-.00291
TAPE SPANNING F.LAG=1/1 START LINE 1 LINES PER VOL= 6970
ORIENTATION=0.00
PROJECTION=UTM USGS PROJECTION = 9 USGS MAP ZONE = 10
USGS PROJECTION PARAMETERS=
0.637820640000000D+07
0.635658380000000D+07
0.999600000000000D+00
0.000000000000000D+00
-0.123000000000000D+07
0.000000000000000D+00
0.500000000000000D+06
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
EARTH ELLIPSOID=CLARK_1866
SEMI-MAJOR AXIS=6378206.400 SEMI-MINOR AXIS=6356583.800
PIXEL SIZE =30.00 PIXELS PER LINE= 7380 LINES PER IMAGE= 6970
UL 1214834.1249W 382627.2376N 603900.000 4255200.000
UR 1191634.3954W 332315.8343N 825270.000 4255200.000
LR 1192206.2888W 363025.5221N 825270.000 4046130.300
LL 1215020.4926W 363324.3627N 606900.000 4046130.300
BANDS PRESENT =1234567 BLOCKING FACTOR =1 RECORD LENGTH = 7380
SUN ELEVATION =59 SUN AZIMUTH =110
CENTER 1206434.7267W 372847.6057N 714309.343 4150664.997 3681 3486
OFFSET= 71
REVB

SPOT IMAGE CORPORATION RESTON VA. 5-APR-1995 09:33:37.31

WORK ORDER NUMBER: 95502099

I M A G I N G P A R A M ETERS

SCENE IDENTIFICATION: 25332759011131904532X

SATELLITE NAME: SPOT 2 WRS *REFERENCE:* *K= 533 J= 275 SCENE SHIFT: 3*

TIME OF SCENE CENTER: 19:04:56 11/13/90
INSTRUMENT: HRV2 SPECTRAL MODE: XS

NUMBER OF SPECTRAL SANDS: 3 SPECTRAL BANDS: XS1 XS2 XS3
NUMBER OF MULTISPECTRAL LINES: 03004
NUMBER OF IMAGERY PIXELS PER MONOSPECTRAL LINES 03191
PRODUCT LEVEL: 16

SCENE PARAMETERS:

C1 LATITUDE: N0373018 C1 LONGITUDE: W1211624 C2 LATITUDE:
N0372347 C2 LONGITUDE:
C1 LINE NUMBER: +00001 C1 PIXEL *NUMBER:* *+00167* *C2* LINE NUMBER:
+00001 C2 PIXEL NUMBER:

SCENE CENTER -
LATITUDE: N0371122 LONGITUDE: W1210133

LINE NUMBER: +01502 PIXEL NUMBER: +01583

C3 LATITUDE: N0365849 C3 LONGITUDE: W1212632 C4 LATITUDE:
M0365221 C4 LONGITUDE:
C3 LINE NUMBER: +03004 C3 PIXEL NUMBER: +00001 C4 LINE NUMBER:
+03004 C4 PIXEL NUMBER:

ORIENTATION: 011.5 INCIDENCE: L06.3 AZIMUTH: +167.5 ELEVATION: 034.2
MIRROR STEP: 57 REVOLUTION NUMBER: 005
GAIN NUMBERS: *6* 7 5 ABSOLUTE CALIBRATION COEF.(W-1 * M2 * SR * MICROMETERS): 1.19104
1.19601 1.2755

TAP E (S) *PA*R A M E T *ER 3*

DOCUMENTATION REFERENCE: SI/85-113
DOCUMENTATION REVISION LEVEL: A. A
DENSITY: 6250
CHARACTER COOING: ASCII
INTERLEAVING INDICATOR: OIL
NUMBER OF VOLUMES IN SET: 1
PHYSICAL TAPE IDENTIFICATION: 0955020990
CREATION DATE: 04/ 5/95 09:33:11

PRODUCT =96072018-01

WRS =042/03507 ACQUISITION DATE =19921220
SATELLITE =L5 INSTRUMENT =TM10
PRODUCT TYPE =MAP ORIENTED PRODUCT SIZE =FULL SCENE
TYPE OF GEODETIC PROCESSING =TERRAIN RESAMPLING =.CC
RAD GAINS/BIASES 1.05590/-.00583 2.60467/-.01220 1.63427/-.00917
2.94411/-.01915 0.68585/-.00546 1.52431/0.12378
0.42587/-.00313
TAPE SPANNING F.LAG=1/1 START LINE 1 LINES PER VOL= 6970
ORIENTATION=0.00
PROJECTION=UTM USGS PROJECTION = 9 USGS MAP ZONE = 10
USGS PROJECTION PARAMETERS=
0.637820640000000D+07
0.635658380000000D+07
0.999600000000000D+00
0.000000000000000D+00
-0.123000000000000D+07
0.000000000000000D+00
0.500000000000000D+06
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
EARTH ELLIPSOID=CLARK_1866
SEMI-MAJOR AXIS=6378206.400 SEMI-MINOR AXIS=6356583.800
PIXEL SIZE =30.00 PIXELS PER LINE= 7380 LINES PER IMAGE= 6970
UL 1204131W 365456N 705600.000 4087800.000
UR 1181435W 365033N 924270.000 4087800.000
LR
LL
BANDS PRESENT =1234567 BLOCKING FACTOR =1 RECORD LENGTH = 7290
SUN ELEVATION =24 SUN AZIMUTH =150
CENTER 1193036.5W 355705.2982N 814793 3983998 3641 3461
OFFSET= -31
REVB

FPGS$DUA3:[INVESTIC015007.INFO;l'

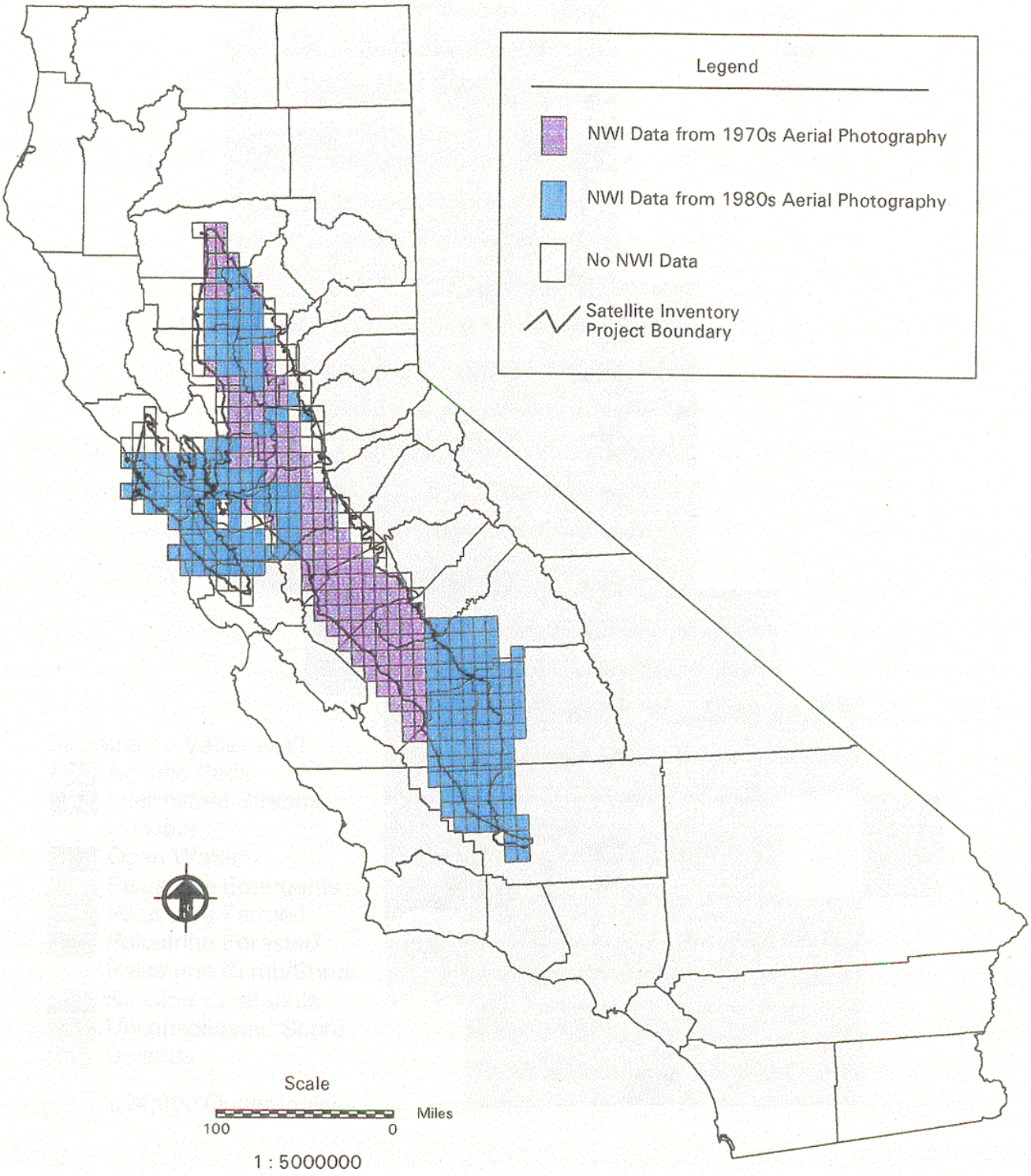
PRODUCT =96015007-01

wrs =042/03507 ACQUISITION DATE =19930630
SATELLITE =L5 INSTRUMENT =TM10
PRODUCT TYPE =MAP ORIENTED PRODUCT SIZE =FULL SCENE
TYPE OF GEODETIC PROCESSING =TERRAIN RESAMPLING =CC
RAD GAINS/BIASES 1.05566/-.00726 2.60550/-.00993 1.63524/-.00917
2.94355/-.02137 0.68578/-.00534 1 .52431/0.12378
0.42578/-.00307
TAPE SPANNING FLAG=1/1 START LINE 1 LINES PER VOL= 6910
ORIENTATION=0.00
PROJECTION=UTM USGS PROJECTION = 9 USGS MAP ZONE = 10
USGS PROJECTION PARAMETERS=
0.637820640000000D+07
0.635658380000000D+07
0.999600000000000D+00
0.000000000000000D+00
-0.123000000000000D+07
0.000000000000000D+00
0.500000000000000D+06
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
0.000000000000000D+00
EARTH ELLIPSOID=CLARK_1866
SEMI-MAJOR AXIS=6378206.400 SEMI-MINOR AXIS=6356583.800
PIXEL SIZE =30.00 PIXELS PER LINE= 7330 LINES PER IMAGE = 6910
UL 1204020.1542W 365406.2738N 707400.000 4086300.000
UR 1181237. 422 4W 364940.5239N 927270.000 4086300.000
LR 1181917.5537W 345755.8046N 927270.000 3879030.000
LL 1204335.2863W 350204.0609N 707400.000 3879030.000
BANDS PRESENT = 1234567 BLOCKING FACTOR
SUN ELEVATION =60 SUN AZIMUTH =107
CENTER 1192357.5989W 355650.9347N
OFFSET= 53
REVB

U.S. Fish and Wildlife Service National Wetlands Inventory Data

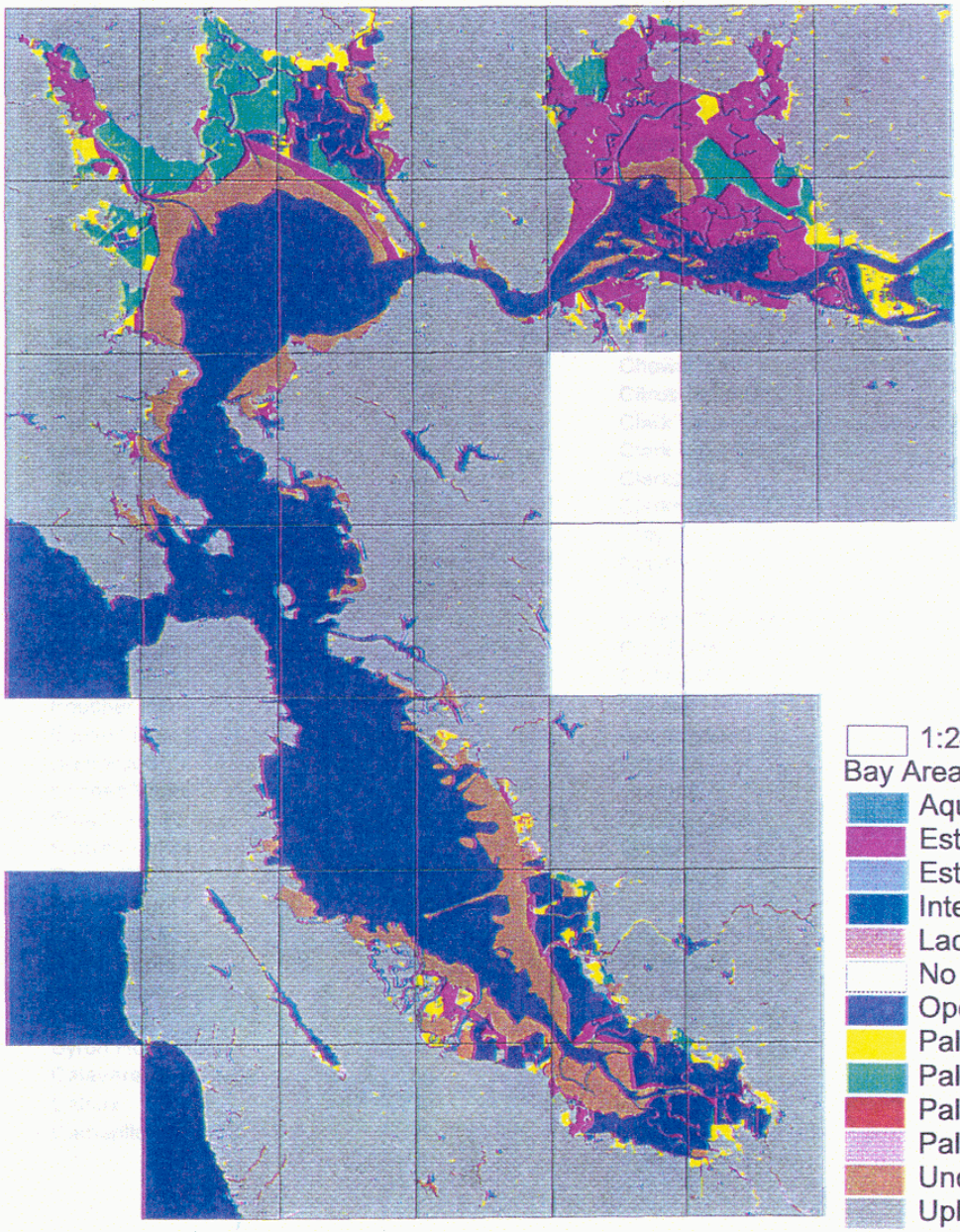
National Wetlands Inventory Data
U.S. Fish and Wildlife Serivce

1:24,000 Scale Quads



National Wetlands Inventory
Sacramento Valley

National Wetlands Inventory
San Francisco Bay Area



National Wetlands Inventory – 1:24,000 Scale Quads

QUAD	YEAR
Academy	84
Agua Caliente Springs	85
Aguanga	85
Allendale	85
Allensworth	87
Alpaugh	87
Alpine	85
Altamont	85
Antelope Plain	84
Antioch North	85
Antioch South	76
Arbuckle	83
Arena	76
Arroyo Tapiado	85
Atwater	76
Auckland	85
Avena	76
Avenal	73
Avenal Gap	84
Bachelor Valley	0
Bangor	0
Barrett Lake	85
Beauty Mountain	85
Belridge	84
Benicia	85
Berenda	76
Big Sur	72
Biggs	84
Biola	73
Bird Valley	0
Birds Landing	85
Blackwells Corner	84
Bliss Ranch	76
Bodega Head	85
Bolinas	85
Bonita Ranch	73
Bonsall	85
Borrego Mountain	85
Borrego Mtn. SE	85
Borrego Palm Canyon	85
Borrego Sink	85
Boucher Hill	85
Bouldin Island	85
Brentwood	85
Briones Valley	85
Broadview Farms	73
Browns Valley	0
Bruceville	76
Brush Lake	76
Bucksnort Mtn.	85
Buffalo Creek	0
Burrell	87
Burris Park	87
Burro Mountain	76
Butte City	84
Buttonwillow	84
Byron Hot Springs	0
Cairns Corner	84
Calaveras Reservoir	85
Calflax	73
Camarillo	76
Cambria	76
Cameron Corners	85
Camp Far West	0
Camp Meaker	0
Campo	85
Cantua Creek	73
Cape San Martin	76
Capell Valley	85
Carbondale	0
Carmichael	76
Carneros Rocks	84
Carpinteria	76
Carrizo Mtn.	85
Carrizo Mtn. NE	85
Caruthers	84
Casmalia	76
Cayucos	76
Cedar Mtn.	85
Ceres	76
Chaney Ranch	73
Charleston School	73
Chico	84
Chounet Ranch	73
Chowchilla	76
Citrus Heights	0
Clark Lake	85
Clark Lake NE	85
Clarksburg	76
Clarksville	0
Clay	76
Clayton	85
Clements	0
Clifton Court Forebay	76
Clovis	84
Coal Oil Canyon	87
Coit Ranch	73
Collins Valley	85

National Wetlands Inventory – 1:24,000 Scale Quads

QUAD	YEAR
Colusa	83
Conejo	84
Conner	87
Conner SW	87
Cooperstown	0
Corcoran	87
Cordelia	85
Corning	76
Cortina Creek	76
Cotati	85
Courtland	76
Cressey	76
Crevison Peak	0
Crows Landing	76
Cupertino	0
Cuttings Wharf	85
Cuyamaca Peak	85
Dana Point	85
Davis	84
Del Mar	85
Delano East	84
Delano West	87
Delta Ranch	76
Denair	76
Denverton	85
Descanso	85
Diablo	85
Dixon	76
Domengine Ranch	73
Dos Palos	73
Dos Pueblos Canyon	76
Double Point	85
Dozier	76
Drakes Bay	85
Drakes Bay NW	85
Dublin	85
Dudley Ridge	87
Dulzura	85
Duncan Mills	0
Dunnigan	76
E. Elk Hills	84
Earthquake Valley	85
El Cajon	85
El Cajon Mtn.	85
El Nido	76
El Rico Ranch	87
Eldorado Bend	76
Elk Grove	76
Elmira	76

QUAD	YEAR
Emigrant Hill	84
Encinitas	85
Escalon	76
Escondido	85
Esparto	0
Exeter	84
Fairfield North	85
Fairfield South	85
Fallbrook	85
Famoso	84
Farmington	76
Firebaugh	73
Firebaugh NE	73
Five Points	73
Florin	76
Folsom	84
Folsom SE	0
Fonts Point	85
Foster Island	85
Fresno North	84
Fresno South	84
Friant	84
Fruto NE	0
Galt	76
Gaviota	76
Gerber	76
Gilsizer Slough	84
Glen Ellen	85
Glenn	83
Gold Hill	0
Goleta	76
Goose Creek	0
Gosford	87
Goshen	84
Gravelly Ford	73
Grays Bend	76
Gregg	84
Gridley	84
Grimes	84
Guadalupe	0
Guerneville	0
Guernsey	87
Guijarral Hills	73
Gustine	76
Hacienda Ranch	87
Hacienda Ranch NE	87
Hacienda Ranch NW	87
Half Moon Bay	85
Hamilton City	76

National Wetlands Inventory – 1:24,000 Scale Quads

QUAD	YEAR
Hamlin Canyon	76
Hammonds Ranch	73
Hanford	87
Harper Canyon	85
Harris Ranch	73
Hatch	76
Hayward	85
Healdsburg	0
Helm	73
Herndon	84
Holt	85
Honcut	84
Honker Bay	85
Hot Springs Mtn.	85
Howard Ranch	76
Humphreys Station	84
Hunters Point	85
Huron	73
Imperial Beach	85
In-Ko-Pa Gorge	85
Ingomar	76
Inverness	85
Isleton	76
Ivanhoe	84
Jacumba	85
Jamesan	73
Jamul Mountains	85
Jersey Island	85
Jimtown	0
Julian	85
Kearney Park	84
Kerman	73
Kettleman City	87
Keystone	0
Kirkville	84
Kirkwood	76
Kismet	76
Knights Ferry	0
Knights Landing	76
La Cima	73
La Costa Valley	85
La Jolla	85
La Mesa	85
Laguna Beach	74
Laguna Seca Ranch	73
Lanes Bridge	84
Las Pulgas Canyon	85
Las Trampas Rid	0
Lathrop	85

QUAD	YEAR
Le Grand	76
Lemoore	87
Levis	73
Liberty Island	76
Lillis Ranch	73
Lincoln	0
Linden	76
Lindsay	84
Live Oak Springs	85
Livermore	85
Llano Seco	84
Lockeford	76
Lodi North	76
Lodi South	85
Logan Ridge	0
Logandale	83
Loma Rica	0
Lone Tree Creek	85
Lone Tree Well	87
Long Beach	72
Lopez Point	72
Los Alamitos	74
Los Banos	76
Los Molinos	76
Los Viejos	87
Lost Hills	84
Lost Hills NE	87
Lost Hills NW	87
Madera	73
Madison	76
Malaga	84
Malibu	76
Manor Slough	0
Manteca	76
Mare Island	85
Margarita Peak	85
Marina	72
Maxwell	83
McFarland	84
Mendenhall Springs	85
Mendota Dam	73
Merced	76
Meridian	84
Merritt	76
Mesa Grande	85
Midway	0
Millux	87
Milpitas	85
Miramonte	85

National Wetlands Inventory – 1:24,000 Scale Quads

QUAD	YEAR
Monocline Ridge	73
Monson	84
Montara Mt.	85
Monterey	72
Monticello Dam	0
Montpelier	76
Monument Peak	85
Morena Reservoir	85
Morro Bay North	76
Morro Bay South	76
Morro Hill	85
Moss Landing	72
Moulton Weir	83
Mount Laguna	85
Mountain View	85
Mt. Carmel	0
Mt. Day	85
Mt. George	85
Mt. Vaca	85
Napa	85
National City	85
Nelson	84
Newark	85
Newman	76
Newport Beach	74
Nicolaus	76
Niles	85
Nord	84
North of Monterey	72
Novato	85
Oakdale	0
Oakland East	85
Oakland West	85
Oasis	85
Oceana	76
Oceanside	85
Olivehurst	76
Orange Cove North	84
Orange Cove South	84
Ord Ferry	84
Orestimba Peak	76
Orland	76
Oroville	0
Ortigalita Peak NW	73
Otay Mesa	85
Otay Mountain	85
Owens Reservoir	0
Oxalis	73
Oxnard	76

QUAD	YEAR
Paige	84
Pala	85
Palermo	0
Palo Alto	85
Palomar Observatory	85
Partington Ridge	73
Patterson	76
Paulsell	0
Pechanga	85
Pennington	84
Petaluma	85
Petaluma Point	85
Petaluma River	85
Peters	76
Pfeiffer Point	72
Pico Creek	76
Piedra	84
Piedras Blancas	76
Pine Flat Dam	84
Pismo Beach	76
Pitas Point	76
Pixley	87
Plainsburg	76
Planada	76
Pleasant Grove	76
Point Arguello	76
Point Bonita	85
Point Conception	76
Point Dume	76
Point Loma	85
Point Mugu	76
Point Reyes NE	85
Point Sal	76
Point Sur	72
Pond	84
Port San Luis	76
Porterville	84
Poso Farm	73
Potrero	85
Poway	85
Princeton	83
Prunedale	72
Rabbit Peak	85
Raisin	87
Ramona	85
Ranchita	85
Rancho Santa Fe	85
Raynor Creek	0
Red Bluff East	76

National Wetlands Inventory – 1:24,000 Scale Quads

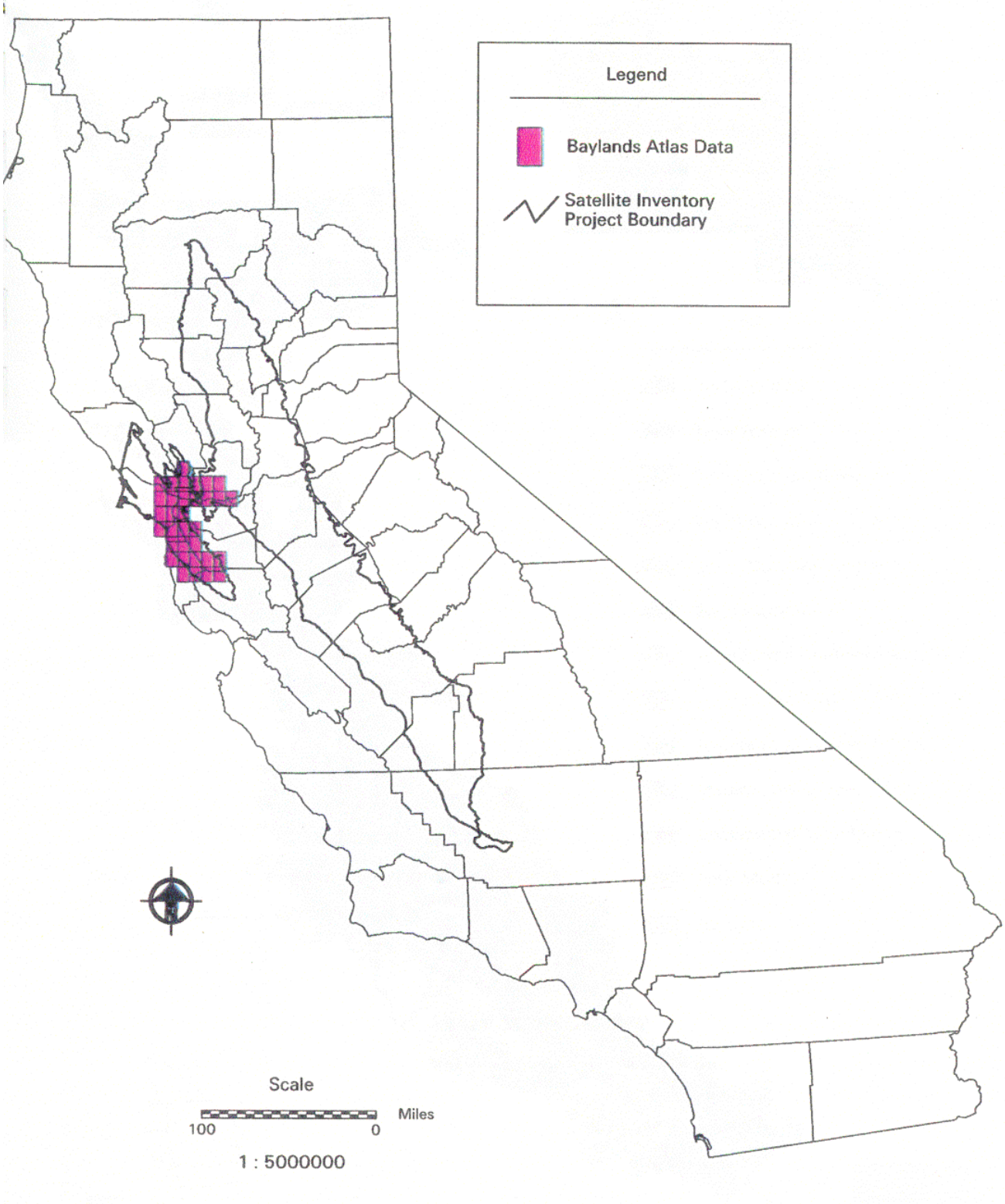
QUAD	YEAR
Red Bluff West	0
Redondo Beach	72
Redwood Point	85
Reedley	84
Remnoy	87
Reward	84
Richardson Springs	84
Richardson Springs NW	76
Richmond	85
Rio Bravo	84
Rio Linda	84
Rio Vista	85
Ripon	76
Riverbank	76
Riverdale	87
Rocklin	0
Rocky Hill	84
Rodriguez Mtn.	85
Rosedale	84
Roseville	84
Round Mountain	84
Rutherford	0
Sacate	76
Sacramento East	76
Sacramento West	84
Salida	76
Salt Canyon	0
San Clemente	85
San Francisco N	85
San Francisco S	85
San Geronimo	85
San Joaquin	73
San Jose East	0
San Jose West	0
San Leandro	85
San Luis Dam	76
San Luis Ranch	76
San Luis Rey	85
San Marcos	85
San Mateo	85
San Onofre Bluff	85
San Pasqual	85
San Pedro	72
San Quentin	85
San Rafael	85
San Simeon	76
San Vicente Reservoir	85
Sanborn Slough	84
Sandy Mush	76
Sanger	84
Santa Barbara	76
Santa Rita Bridge	76
Santa Rosa	0
Santa Teresa Hill	0
Santa Ysabel	85
Sausalito School	87
Saxon	76
Seal Beach	74
Sears Point	85
Seaside	72
Sebastopol	0
Selma	84
Semitropic	87
Seventeen Palms	85
Shell Reef	85
Sheridan	76
Shippee	84
Sites	0
Sloughhouse	0
Smartville	0
Snelling	0
Soberanes Point	72
Solyo	85
Sombrero Peak	85
Sonoma	85
Soquel	72
Stevens	87
Stevinson	76
Stockton East	76
Stockton West	85
Stokes Mountain	84
Stone Valley	0
Stratford	87
Stratford SE	87
Surf	76
Sutter	76
Sutter Buttes	84
Sutter Causeway	84
Sweeney Pass	85
Tajiguas	76
Tassajara	0
Taylor Monument	84
Taylor Weir	87
Tecate	85
Temecula	85
Terminous	85
Thorton	76
Tierra Del Sol	85

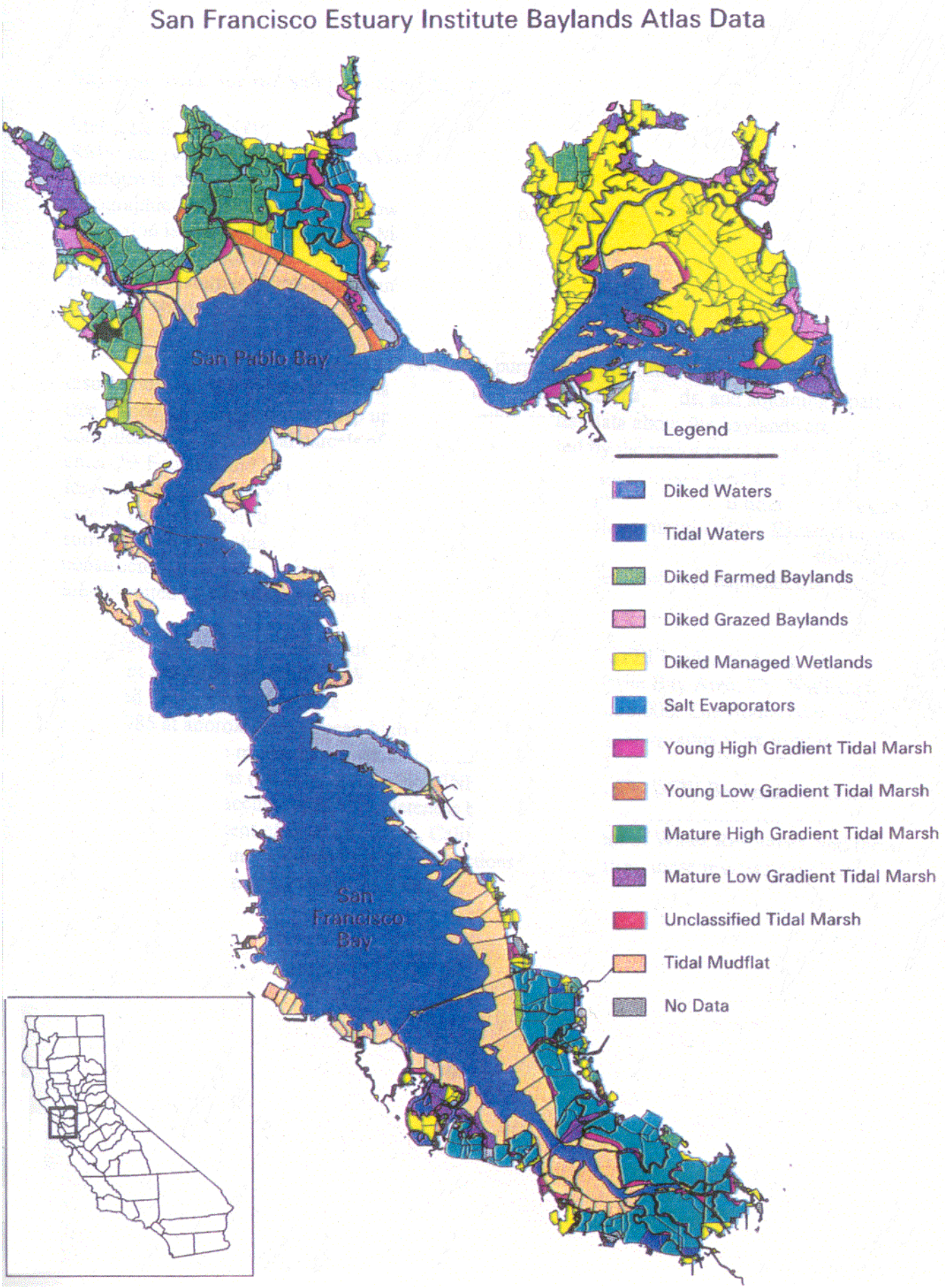
QUAD	YEAR
Tipton	84
Tisdale Weir	84
Tomales	85
Topanga	76
Torrance	72
Tracy	85
Tranquillity	73
Tranquillon Mtn.	76
Traver	84
Tres Pecos Farms	73
Trimmer	84
Triunfo Pass	76
Tubb Canyon	85
Tulare	84
Tule Springs	85
Tupman	87
Turlock	76
Turlock Lake	0
Turner Ranch	76
Tuscan Springs	76
Tustin	74
Two Rock	85
Union Island	85
Vail Lake	85
Valley Center	85
Valley Ford	85
Vanguard	87
Venice	72
Ventura	76
Vernalis	85
Verona	76
Viejas Mountain	85
Villa Creek	76
Vina	76
Vine Hill	85
Visalia	84
Volta	76
W. Elk Hills	84
Wahtoke	84
Walnut Creek	0
Warner Springs	85
Warners Ranch	85
Wasco	84
Wasco NW	87
Wasco SW	87
Waterford	76
Waterloo	76
Watsonville West	72
Waukena	87

QUAD	YEAR
West Camp	84
West of Biggs	84
West of Casmalia	76
West of Cayucos	76
West of Del Mar	85
West of Imperial Beach	85
West of La Jolla	85
West of Lopez Point	72
West of Montara	85
West of Morro Bay So.	76
West of Oceana	76
West of Oxnard	76
West of Point Loma	85
West of Point Mugu	76
West of Port San Luis	76
West of Surf	76
Westhaven	87
Westley	76
Westside	73
Whale Peak	85
Wheatland	0
Wildwood School	76
Williams	83
Willows	83
Winters	76
Winton	76
Woodlake	84
Woodland	76
Woodside	85
Woodville	84
Woodward Island	85
Yosemite Lake	0
Yountville	0
Yuba City	76
Zamora	76

Baylands Atlas Data
San Francisco Estuary Institute

1:24,000 Scale Quads Based on 1985 NWI Data




San Francisco Estuary Institute Baylands Atlas Data
San Pablo Bay
San Francisco Bay
Legend
Diked Waters
Tidal Waters
Diked Farmed Baylands
Diked Grazed Baylands
Diked Managed Wetlands
Salt Evaporators
Young High Gradient Tidal Marsh
Young Low Gradient Tidal Marsh
Mature High Gradient Tidal Marsh
Mature Low Gradient Tidal Marsh
Unclassified Tidal Marsh
Tidal Mudflat
No Data

Baylands Atlas for the San Francisco Bay Area

Mapscale is 1:24,000.
RMS: not available (based upon NWI)
Platform is Arclnfo
Geographic Scope is the Estuary downstream of Broad Slough.
Projection is Universal Transverse Mercator (UTM)
UTM Zone Number is 10
Horizontal Datum is North American Datum 1927
Ellipsoid Name is Clark 1866 ~

The SFEI Baylands Atlas serves two main purposes at this time. It is a map of the distribution and abundance of mudflats, tidal marshlands, diked baylands, and adjoining riparian tree stands. It is also the base map upon which other spatial data about the baylands are compiled, and. Individual parcels of mudflats are delimited by the major creeks and rivers that enter the Estuary, and by the boundaries of contiguous study plots established by the Point Reyes Bird Observatory. Parcels of tidal marshlands are delimited by natural tidal channels that extend from the shoreline of a estuarine bay or river to the upland margin of the Estuary, or that surround some marshland and cause it to be an island. Parcels of diked baylands are delimited by constructed levees that support a light-duty truck road or larger roadway. Riparian tree stands are delimited by the outboard trip line of the riparian trees

Several sources of information are incorporated into the SFEI Baylands Atlas. The dominant source is the National Wetlands Inventory (NWI) for the Bay Area. The NWI was compiled from color infr-ared aerial photographs at a scale of 1:58,000. The flights occurred in April 1985 at approximately mean high water (MHW). These photographs were used to produce 7.5 minute mylar maps, which were then digitized and incorporated into Geographic Information Systems (GIS) including ARC/INFO and GRASS. The SFEI Baylands Atlas has been reviewed for accuracy and completeness by the public and by representatives of the California Department of Fish and Game, California Department of Water Resources, and the United States Fish and Wildlife Service. Corrections resulting from these reviews have been incorporated into the SFEI Baylands Atlas.

Baylands Data Dictionary, column variables in the ARC/INFO polygon attribute table
5/16/95
area in square meters
pen-meter in meters
NWICLASS-SFEI's tidal classification scheme

1. Diked Waters
2. Tidal Waters
3. fdb - diked farmed baylands
4. dgb - diked grazed baylands
5. dmw - diked managed wetlands
6. Salt Evaporators
7. yhgtm - young high gradient tidal marsh
8. ylgtm . young low gradient tidal marsh
9. mhgtm - mature high gradient tidal marsh
10. mlgtm mature low gradient tidal marsh
11. Tidal-Marsh - tidal marsh unclassified
12. Tidal Mudflat
13. No . Data - uplands or no data

BAY--the Bay segment areas where the parcels exist

Central Bay - between Richmond and Bay Bridges
Lower South Bay - South of Dumbarton Bridge
San Francisco Bay - Between Bay Bridge and San Mateo Bridge
San Pablo Bay
South Bay - Between San Mateo and Dumbarton Bridge
Suisun Bay

BCDC TYPE--the Bay Conservation and Development Commission Diked Baylands Study classification

diked
partially diked
salt pond
0 - not applicable

DEDRICK TYPE-Kent Dedricks tidal marsh classification scheme

diked
island
partially diked
tidal
0 - not applicable

DEDRAGR-shows whether the Dedrick classification coresponds with SFEI's classification

y
n
0 - not applicable

DEDRPARC-Dedricks parcel ID

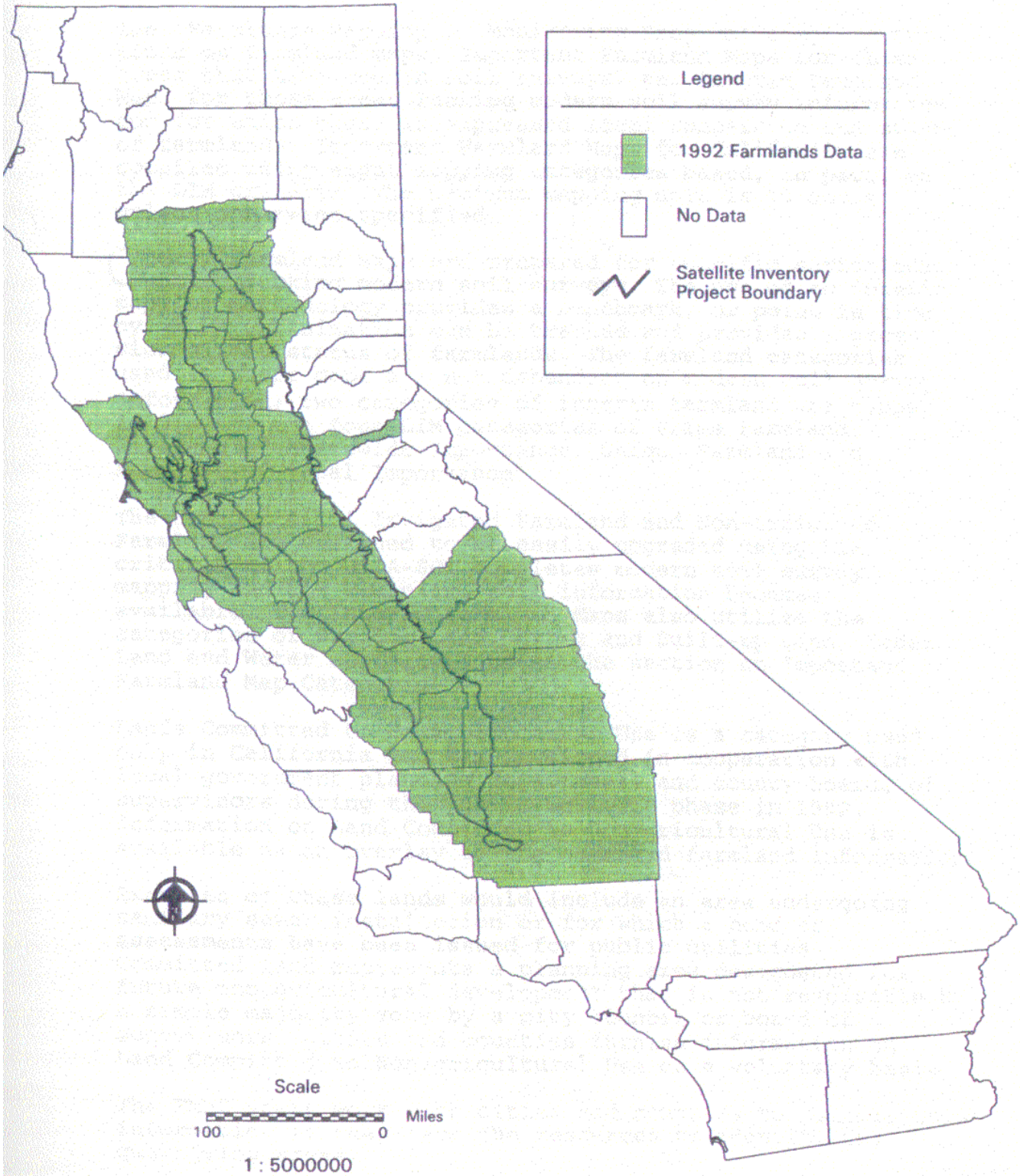
0 - not applicable

AHID - SFEI's unique ID for each parcel

FWSR - shows whether a parcel falls within the US Fish and Wildlife restoration template boundaries

Department of Conservation Farmlands Mapping and Monitoring Data

Farmlands Data
Department of Conservation
Farmlands Mapping and Monitoring Program



LIBRARY: county
LAYER: FARMLANDS

COVERAGE DESCRIPTION:

The “Farmlands Mapping & Monitoring Program”, compiles two kinds of farmland maps: important Farmland Maps for those areas that have modern soil surveys, and Interim Farmland maps for those areas lacking modern soil survey information and for which there is expressed local concern on the status of farmlands. Important Farmland Maps for California are compiled using eight mapping categories based, in part, on the LIM criteria. The minimum mapping unit is 10 acres unless otherwise specified.

Interim Farmland Maps are prepared for specific agricultural counties lacking modern soil surveys. The use of an interim mapping methodology provides a benchmark, or point in time, by which urbanization can be tracked and provides a gross view of the status of farmlands. The farmland categories used in these maps are not dependent on modern soil survey information; two categories of interim farmland are mapped in lieu of the four LIM categories of Prime Farmland, Farmland of Statewide Importance, Unique Farmland and Farmland of Local Importance.

The categories of irrigated Farmland and Non-irrigated Farmland are designed to be easily upgraded using LIM criteria as the USDA-SCS completes modern soil survey mapping and the technical soil information becomes available. The Interim Farmland Maps also utilize the categories of Grazing Land, Urban and Built-up Land, Other Land and Water as defined under the section on Important Farmland Map Categories.

Lands Committed to Nonagricultural Use is a category used only in California and was developed in cooperation with local government planning departments and county boards of supervisors during the public workshop phase in 1982. Information on Land Committed to Nonagricultural Use is available as an overlay to the standard farmland information.

Examples of these lands would include an area undergoing sanitary sewer installation or for which a bond or assessments have been issued for public utilities. Committed land represents a planning area designated for future nonagricultural development that is not reversible by a simple majority vote by a city council or board of supervisors. Cities and counties furnish information on Land Committed to Nonagricultural Use on a voluntary basis.

The FMMP staff work with cities, and counties to compile this information if they lack the resources to identify the qualifying Areas.

VITAL STATISTICS:

Datum:	NAD 27
Projection:	UTM, zones 10 & 11
Units:	Meters
1st std. Parallel:	N/A
2nd Std. Parallel:	N/A
Longitude of Origin;	N/A
Latitude of Origin:	N/A
False Easting (X shift)	N/A
False Northing (Y shift):	N/A
Source:	Department of Conservation
Source media:	Mixed photo 1:24,000 quad
Source Projection:	7 ½ ‘ quad
Source Units:	Meters
Source Scale:	100,000
Capture Method:	Digitized
Conversion Software:	Arc/INFO
Data Structure-	vector
ARC/INFO Coverage Type:	Polygon
Arc/INFO Precision:	Double
ARC/INFO Tolerances:	1 meter
Number of Features:	730,000.
Layer Size:	40 MB
Version:	1986, 1988
Data Updated	Every two years

DATA DICTIONARY:

DATAFILE NAME: COUNTY#.PAT(CO14-PAT)
RECORD LENGTH: 26

Nonstandard POLYGON attribute fields*:*

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC
25	Code	2	2	C	

NOTE: Items common to all POLYGON coverages: AREA, PERIMETER, COUNTY#.A# and COUNTY#.A-ID are not described here.

CODE: Code that identifies type of land

Code	Land Type	Description
P	Prime Farmland:	Lands with the best *combination of* physical and chemical features able to sustain long term production of *agricultural crops. Must* have been used to produce irrigated-crops at some time during the two update cycles prior to the mapping date.
S	Farmland of Statewide Importance:	Lands similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Must have been used to produce irrigated crops at some time during the two update cycles prior to the mapping date.

U	Unique Farmland:	Lesser quality soils used to produce State's leading agricultural drops. Includes non-irrigated orchards or vineyards.
L	Farmland of Local Importance:	Lands of importance to the local agricultural economy, as determined each county's board of supervisors; and a local advisory committee.
G	Grazing Land:	Lands on which existing vegetation is suited to livestock grazing.. This category developed in cooperation with the California Cattlemen's Association and U.C. cooperative Extension. Is used only in California. Minimum mapping unit is 40 acres.
D	urban and built-up Land:	Lands occupied by structures with a building density of at least one unit to 1.5 acres, or approximately six structures to a ten-acre parcel.
X	Other Land:	Lands not meeting criteria of any other category.
W	Water:	Water bodies 40 acres or more in size.
I	Irrigated Farmland:	Cropped land with a developed irrigation water supply that is dependable and of adequate quality. Must have been used to produce-irrigated crops at some time during the two update cycles prior to the mapping date.
N	Non-Irrigated Farmland:	Land on which agricultural commodities are produced utilizing stored soil moisture.
N/A	Land Committed to Non-Agricul-tural Use:	Existing farmland, grazing land and vacant areas which have a permanent commitment for development.
LP	Local Potential:	All lands having Prime and Statewide soil mapping units which are not irrigated, regardless of cropping history or irrigation water-availability.
Z	Non-Surveyed:	Land not surveyed.
ZZ	Non-Classification Survey Area:	Surveyed area not classified.

The Following are subjective comments regarding this data.

The mapping only covers potential farmland areas; thus does not extend into national forest or highly urbanized areas, such as City and County of San Francisco. Grazing and other classifications are mapped at 40 acre minimum mapping area while urban is mapped at 10 acre minimum mapping area. As of 1992, county borders were not coincident between counties or with the Teale county tile structure.

The coverages have been checked twice for polygon labeling omission or duplication for years prior to 1990. The user must understand the classification conglomeration of:
current land use, potential land use, soil type, irrigation use, and different minimum mapping units.

The guide to the Farmland Mapping and Monitoring Program should be referenced as the basis for some classification changes by county.

DATA CONTACT:

Contact Name:	Lee Neher (Teale)
Contact's Phone:	916-263-1321
Contact Name:	Greg Posley Department of Conservation Farmlands Mapping program
Contact's Phone:	916-324-2761

Department of Fish and Game River Reach Hydrography Data

LIBRARY : <NONE>
LAYER NAME : <NONE>
COVERAGE NAME : <cc>JHYSA
LOCATION : /tlib/hydro

COVERAGE DESCRIPTION:

The hydrography layer represents steams, rivers, canals, lakes, reservoirs and other hyrography features that are represented by arcs and polygons. It is derived from the USGS in digital line graph (DLG-3) data in the 80-byte format. The data was captured from 1:100,000-scale maps. Additional data was also captured by manual digitizing and raster scanning. There are approximately 3200 DLG files represented in the statewide hydrography data layer.

The hydrography layer consists of all flowing waters, standing waters, and wetlands---both natural and manmade. The layer is composed of two separate feature types: polygons (areas) and lines. Polygon features have attribute codes that identify water bodies such as lakes, wide river segments, or swamps. Line features have attribute codes that represent streams or shorelines.

Edits to the original linework have been made during the data conversion by Teale from the original DLG-3 format to the Arc/INFO(tm) GIS format. Such changes include line movements (due to the map edge-matching process), minor corrections of attribute coding, and the closing of open polygons. Flow direction for streams (type line) has also been added. Stream lines are flagged (where item FLOW = 1) to indicate whether or not the direction of a given stream (line) has been defined and/or verified by Teale.

County lines (a separate Teale data layer) and hydrography lines are not reconciled with each other and discrepancies between the two will occur when a county boundary follows a water feature.

The Hydrography layer is stored in pieces that correspond to the 1:250,000-scale quad series.

In 1992, the Teale hydrography data layer was sent to US EPA for use in their River Reach File system version 3, also known as Reach File 3 or RF3-alpha. RF3 is US EPA's national hydrographic addressing system which contains unique location and connectivity codes, water feature names, and update documentation. This system was developed by Horizon Systems Corporation, under contract to the US EPA Office of Water. RF3 as archived at Teale consists of US EPA-generated data tables, designated by the filename extension .DS2 (for example: RDJHYSA.DS2). The DS2 file is stored as an 'external' data table within the hydro workspace's INFO subdirectory.

There are two ways to link the RF3 records in the DS2 files with the hydrography arc attribute tables (AAT). The first involves the item RF3RCHID, which is a concatenated string consisting of three fields: the USGS Cataloging Unit (CU, an 8-digit watershed code), a numeric stream segment identifier (SEG), and a Marker Index (MILE), an item indicating relative upstream position along a given SEG. The second way to link the DS2 and the AAT is on the HSCKEY item described above. The RF3RCHID and HSCKEY items are present in the Teale versions of both the DS2 and AAT files. Note: the most reliable primary key for individual hydrography features consists of HYSNUM combined with HSCKEY.

VITAL STATISTICS:

Datum:	NAD 27
Projection:	Albers
Units:	Meters
1st Std. Parallel:	34 00 00
2nd Std. Parallel:	40 30 00
Longitude of Origin:	-120 00 00
Latitude of Origin:	00 00 00
False Easting (X shift):	0
False Northing (Y shift):	-4,000,000
Source:	USGS DLG-3 (optional format)
Source Media:	Magnetic tape (80 byte records)
Source Projection:	Universal Transverse Mercator UTM Zones 10 & 11
Source Units:	Meters
Source Scale:	1:100,000
Capture Method:	Scanned, digitized
Conversion Software:	ARC/Info rev 5.0.1
Data Structure:	Vector
ARC/INFO Coverage Type:	NET (Line, polygon)
ARC/INFO Precision:	Double
ARC/INFO Tolerances:	0 to 200 meters
Number of Features:	16,077
Layer Size:	116.970 MB
Data Updated:	September 1993 (added RF3 line feature table) (other unscheduled updates have been made, see original log file in Teale workspace)

DATA DICTIONARY:

DATAFILE NAME: <xx>JHYSA.AAT where xx = tile code (see index)
RECORD LENGTH: 98

Non-standard LINE attribute fields:

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC
33	MAJOR1	4	6	B	-
37	MINOR1	4	6	B	-
41	MAJOR2	4	6	B	-
45	MINOR2	4	6	B	-
49	MAJOR3	4	6	B	-
53	MINOR3	4	6	B	-
57	MAJOR4	4	6	B	-
61	MINOR4	4	6	B	-
65	MAJOR5	4	6	B	-
69	MINOR5	4	6	B	-
73	FLOW	1	1	I	-
74	HSCKEY	6	6	I	-
80	HYSNUM	2	2	I	-
82	RF3RCHID	17	17	C	-

NOTE: Items common to all LINE coverages: FNODE#, TNODE#, LPOLY#, RPOLY#, LENGTH, <xx>JHYSA# and <xx>JHYSA-ID are not described here; with one exception:

<xx>JHYSA-ID: where User ID negative (<0), arc is an artificial neatline (coverage or tile boundary).

FLOW: If equal to 1, flow direction is defined; if equal to 0, no direction is defined.

HSCKEY: Unique sequence number. Item was created for EPA's

Reach File System. Use HSCKEY to relate to the RF3 DS2 data file of a given tile (see HYSNUM below).

HYSNUM: Hydrography quad tile sequence number; 1 through 33. Item was created for EPA's Reach File System; combine with HSCKEY to uniquely code features across tiles.

RF3RCHID: Primary key of RF3; concatenates CU, SEG, MILE; see desrcription of <xx>JHYSA.DS2 files below.

MAJOR1-5: Major codes denote hydrography (code 50) as the major feature category to which a line element belongs (as opposed to property boundaries, roads, etc within DLGs).

MINOR1-5: Minor codes assign up to five descriptive subcategories to any single hydrography line element.

Major Code #	Minor Code #	Element Description
50	200	Shoreline
50	201	Man-made shoreline
50	202	Closure line
50	203	Indefinite shoreline
50	204	Apparent Limit
50	205	Outline of a Carolina bay
50	206	Danger curve
50	400	Rapids
50	401	Falls
50	402	Gravel pit/quarry filled w/water
50	403	Gaging station
50	404	Pumping station
50	405	Water intake
50	406	Dam or weir
50	407	Canal lock or sluice gate
50	408	Spillway
50	409	Gate(flood,tidal,head,check)
50	410	Rock
50	411	Crevasse
50	412	Stream
50	413	Braided stream
50	414	Ditch or canal
50	415	Aqueduct
50	416	Flume
50	417	Penstock
50	418	Siphon
50	419	Channel in water area
50	420	Wash or ephemeral drain
50	421	Lake or pond
50	422	Coral reef
50	423	Sand in open water
50	424	Spoil area
50	425	Fish ladders
50	601	Underground
50	602	Overpassing
50	603	Elevated
50	604	Tunnel
50	605	Right bank
50	606	Left bank
50	607	Under construction
50	608	Salt
50	609	Unsurveyed
50	610	Intermittent
50	611	Abandoned or discontinued

50	612	Submerged or sunken
50	613	Wooded
50	614	Dry
50	615	Mineral or hot (sulphur,alkali,etc.)
50	616	Navigable transportation
50	617	Underpassing
50	618	Earthen construction
50	000	Photorevised feature
05N	---	Water surface elevation, actual or interpolated. N = elevation units 1=feet 2=meters 6=feet below datum 7=meters below datum
053	---	Angle of clockwise rotation (nearest whole degree)
055	---	River mile, value in four spaces, right justified
058	000	Best estimate of classification or position
059	0--	Coincident feature

DATA DICTIONARY:

DATAFILE NAME: <xx>JHYSA.DS2 where xx = tile code (see index)
RECORD LENGTH: 450

Non-standard LINE attribute fields:

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	DESCRIPTION
1	CU	8	8	I	-	Catalog Unit
9	SEG	4	4	I	-	Segment No.
13	MILE	5	5	N	2	Mile Point
18	UPMI	5	5	N	2	Upstream Mile Pt.
23	RFLAG	1	1	C	-	Reach Flag
24	OWFLAG	1	1	C	-	Open Water Flag
25	TFLAG	1	1	C	-	Terminal Flag
26	SFLAG	1	1	C	-	Start Flag
27	REACHTYPE	1	1	C	-	Reach Type Code
28	LEVEL	2	2	I	-	Stream Level
30	JUNC	2	2	I	-	Downstream Rch Lvl
32	DIVERGENCE	1	1	I	-	Divergence Code
33	USDIR	1	1	C	-	Upstream Direction
34	TERMID	5	5	I	-	Terminal Stream ID
39	TRMBLV	1	1	I	-	Terminal Base Level
40	PNAME	30	30	C	-	Primary Name
70	PNMCD	11	11	C	-	Primary Name Code
81	CNAME	30	30	C	-	Complement Name
111	CNMCD	11	11	C	-	Complement Name Code
122	OWNAME	30	30	C	-	Open Water Name
152	OWNMCD	11	11	C	-	Open Water Name Code
163	DSCU	8	8	I	-	Downstream CU
171	DSSEG	4	4	I	-	Downstream SEG
175	DSMI	5	5	N	2	Downstream MI
180	CCU	8	8	I	-	Complement CU
188	CSEG	4	4	I	-	Complement SEG
192	CMILE	5	5	N	2	Complement MI
197	CDIR	1	1	C	-	Complement Direction
198	ULCU	8	8	I	-	Upstream Left CU
206	ULSEG	4	4	I	-	Upstream Left SEG
210	ULMI	5	5	N	2	Upstream Left MI

215	URCU	8	8	I	-	Upstream Right CU
223	URSEG	4	4	I	-	Uppstream Right SEG
227	URMI	5	5	N	2	Upstream Right MI
232	SEGL	6	6	N	2	Reach Length (Miles)
238	RFORGFLAG	1	1	I	-	RF Origin flag(1-3)
239	ALTPNMCD	8	8	I	-	Alt. Prime Name Code
247	ALTOWNMC	8	8	I	-	Alt. OW Name Code
255	DLAT	8	8	N	4	Downstream Latitude
263	DLONG	8	8	N	4	Downstream Longitude
271	ULAT	8	8	N	4	Upstream Latitude
279	ULONG	8	8	N	4	Upstream Longitude
287	MINLAT	8	8	N	4	Minimum Latitude
295	MINLONG	8	8	N	4	Minimum Longitude
303	MAXLAT	8	8	N	4	Maximum Latitude
311	MAXLONG	8	8	N	4	Maximum Longitude
319	NDLGREC	4	4	I	-	No. of DLG Records
323	Ln1AT2	4	4	I	-	DLG Line Attribute 1
327	Ln2AT2	4	4	I	-	DLG Line Attribute 2
331	AR1AT2	4	4	I	-	DLG Area Attribute
335	AR1AT4	4	4	I	-	DLG Area Attribute
339	AR2AT2	4	4	I	-	DLG Area Attribute
343	AR2AT4	4	4	I	-	DLG Area Attribute
347	UPDATE1	6	6	C	-	Updt Date #1(MMDDYY)
353	UPDTCD1	8	8	C	-	Updt Type Code #1
361	UPDTSRC1	8	8	C	-	(This field set to correspond to Teale DLG dataset ids-See HYSNUM and HSCKEY)
369	UPDATE2	6	6	C	-	Updt Date #2(MMDDYY)
375	UPDTCD2	8	8	C	-	Updt Type Code #2
383	UPDTSRC2	8	8	C	-	Updt Source #2
391	UPDATE3	6	6	C	-	Updt Date #3(MMDDYY)
397	UPDTCD3	8	8	C	-	Updt Type Code #3
405	UPDTSRC3	8	8	C	-	Updt Source #3
413	DIVCU	8	8	I	-	Divergent CU
421	DIVSEG	4	4	I	-	Divergent SEG
425	DIVMI	5	5	N	2	Divergent MI
430	DLGID	6	6	I	-	DLG Number (special use)
436	FILLER	7	7	C	-	Filler for Future use
443	HSCKEY	6	6	I	-	(Added by Teale- Value is same as last 6 digits of UPDTSRC1- Relate key to the AAT file)
449	HYSNUM	2	2	I	-	(Added by Teale- Value same as first 2 digits of UPDTSRC1- Hydro quad sequence number 1-33)
	** REDEFINED ITEMS **					
1	RF3RCHID	17	17	C	-	(Reach number that uniquely identifies all reaches)

DATA DICTIONARY:

DATAFILE NAME: <xx>JHYSA.PAT
RECORD LENGTH: 56

Non-standard POLYGON attribute fields:

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC
25	MAJOR1	4	6	B	-
29	MINOR1	4	6	B	-
33	MAJOR2	4	6	B	-
37	MINOR2	4	6	B	-
41	MAJOR3	4	6	B	-
45	MINOR3	4	6	B	-
49	MAJOR4	4	6	B	-
53	MINOR4	4	6	B	-

NOTE: Items common to all POLYGON coverages: AREA, PERIMETER, <xx>JHYSA# and <xx>JHYSA-ID are not described here.

MAJOR1-4: Major codes denote hydrography (code 50) as the major feature category to which an area element belongs.

MINOR1-4: Minor codes assign up to four descriptive subcategories to any single hydrography area element.

Major Code #	Minor Code #	Element Description
50	100	Alkali flat
50	101	Reservoir
50	102	Covered reservoir
50	103	Glacier or permanent snowfield
50	104	Salt evaporator
50	105	Inundation area
50	106	Fish hatchery or farm
50	107	Industrial water impoundment
50	108	Area to be submerged
50	109	Sewage disposal pond/filtration bed
50	110	Tailings pond
50	111	Marsh, wetland,swamp,bog
50	112	Mangrove area
50	113	Rice Field
50	114	Cranberry bog
50	115	Flats(tidal,mud,sand,gravel)
50	116	Bays,estuaries,gulfs,oceans,seas
50	117	Shoal
50	118	Soda evaporator
50	119	Duck pond
50	400	Rapids
50	401	Falls
50	402	Gravel pit/quarry filled w/water
50	403	Gaging station
50	404	Pumping station
50	405	Water intake
50	406	Dam or weir
50	407	Canal lock or sluice gate
50	408	Spillway
50	409	Gate(flood,tidal,head,check)
50	410	Rock

50	411	Crevasse
50	412	Stream
50	413	Braided stream
50	414	Ditch or canal
50	415	Aqueduct
50	416	Flume
50	417	Penstock
50	418	Siphon
50	419	Channel in water area
50	420	Wash or ephemeral drain
50	421	Lake or pond
50	422	Coral reef
50	423	Sand in open water
50	424	Spoil area
50	425	Fish ladders
50	601	Underground
50	602	Overpassing
50	603	Elevated
50	604	Tunnel
50	605	Right bank
50	606	Left bank
50	607	Under construction
50	608	Salt
50	609	Unsurveyed
50	610	Intermittent
50	611	Abandoned or discontinued
50	612	Submerged or sunken
50	613	Wooded
50	614	Dry
50	615	Mineral or hot (sulphur, alkali,etc.)
50	616	Navigable transportation
50	617	Underpassing
50	618	Earthen construction
50	000	Photorevised feature

DATA QUALITY ASSESSMENT:

The following are subjective comments regarding this data.

The USGS DLG features of this layer are fairly complete. The density of line work representing drainage networks appears to vary arbitrarily from quad to quad, and there are discontinuities in lines depicting streams at the edges of 100k quads. The geographic feature accuracy is fair. Contiguous features are not always matched across map sheet boundaries. The attribute completeness and accuracy is good. The US EPA River Reach file as archived at Teale is an alpha release (prototype). As such, users are cautioned to verify drainage network connectivity and water feature names before undertaking extensive processing using RF3 data.

DATA CONTACTS:

Contact Name: Virginia Wong-Coppin (Teale Data Center)
Contact's Phone: 916-263-1489

Contact Name: Paul Veisze (Department of Fish & Game)
Contact's Phone: 916-323-1667

Revised October 1995.

Department of Water Resources Landuse Data

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

STANDARD LAND USE LEGEND

July 1993

(This Legend is for land use surveys conducted In 1993 and after.)

The Minimum breakdown of Land use is according to the class symbol. More detail is obtained by adding the subclass number to the class symbol, or by use of special condition symbols. Any or all of the following information can be delineated.

1. Types of agricultural, urban, or native Land use.
2. Specific crops.
3. Multiple Land use.
4. Sources of water supply.
5. Type of irrigation system.

AGRICULTURAL CLASSES

The vast majority of crops grown in California are irrigated. Unless preceded with an "n" if it is non-irrigated, all agricultural classes are considered irrigated. (This statement is for the agricultural classes and does not apply to the other non-agricultural classes of semiagricultural, urban, or native.)

G - GRAIN AND RAY CROPS

1. Barley
2. Wheat
3. oats
6. Miscellaneous and mixed grain and hay

R - RICE

F - FIELD CROPS

1. Cotton
2. Safflower
3. Flax
4. Hops
5. Sugar beets
6. Corn (field & sweet)
7. Grain sorghum
8. Sudan
9. Castor beans
10. Beans, dry (all types)
11. Miscellaneous field
12. sunflowers

P - PASTURE

1. Alfalfa & alfalfa mixtures
2. Clover
3. Mixed pasture
4. Native pasture
5. Induced high water table native pasture
6. Misc. grasses (normally grown for seed)
7. Turf farms

T - TRUCK, NURSERY and BERRY CROPS

1. Artichokes
2. Asparagus
3. Beans (green)
4. Cole crops (when further breakdown is not needed)
6. Carrots
7. Celery
8. Lettuce (all types)
9. Melons, squash, and cucumbers (all types)
10. Onions and garlic
11. Peas
12. Potatoes
13. Sweet Potatoes
14. Spinach
15. Tomatoes
16. Flowers, nursery Christmas tree farms
17. Mixed (four or wore)
18. Miscellaneous truck
19. Bushberries
20. Strawberries
21. Peppers (chili, bell, etc.)
22. Broccoli
23. Cabbage
24. Cauliflower
25. Brussels sprouts

D - DECIDUOUS FRUITS AND NUTS

1. Apples
2. Apricots
3. Cherries
5. Peaches and nectarines
6. Pears
7. Plums
8. Prunes
9. Figs
10. miscellaneous deciduous
12. Almonds
13., Walnuts
14. Pistachios

C - CITRUS AND SUBTROPICAL

1. Grapefruit
2. Lemons
3. Oranges
4. Dates
5. Avocados
6. Olives
7. Miscellaneous subtropical fruits
S. Kiwis
9. Jojoba
10. Eucalyptus

V - VINEYARDS

1. Table grapes
2. Vine grapes
3. Raisin grapes

I - IDLE (precede with “n" in non-irrigated area)
(Must include subclass)

1. Land cropped within the past three years but not cultivated at the time of survey.

2. New Lands being prepared for crop production.

SEMIAGRICUILTURAL CLASS
(Do not precede with “n")

S - SEMIAGRICULTURAL & INCIDENTAL TO AGRICULTURE (Must include subclass)

1. Farmsteads
2. Livestock feed lots
3. Dairies
4. Poultry farms

URBAN CLASSES

(Do not precede with “n”)

U - URBAN Residential, commercial, and industrial (May be used atone when further breakdown is not required)

UR- RESIDENTIAL - Single and multiple family units, including trailer courts (May be used atone when further breakdown is not required)

1. Single family dwellings with tot sizes greater than 1 acre up to 5 acres. (ranchettes etc.)
2. Single family dwellings with a density of I unit/acre up to 8+ unit/acre.
3. multiple family (apartments, condos, townhouses, barracks, bungalows, duplexes, etc.)
4. Trailer courts

WATER USE FACTOR (% of total area irrigated - will be the second digit of UR Subclass when water factor is used)

1 0% to 25% area irrigated
2 26% to 50% area irrigated
3 51% to 75% area irrigated
4 76% or greater

Example:UR32 Multiple family with water use factor of 26% to 50% of area irrigated.

UC - COMMERCIAL (May be used atone when further breakdown is not required)

1. Offices, retailers, etc.
2. Hotels

3. Motels
4. Recreation vehicle parking & camp sites
5. Institutions (hospitals, prisons, reformatories, asylums, etc., having a reasonably constant 24-hour resident population
6. Schools (yards to be mapped separately if large enough)
7. Municipal auditoriums, theaters, churches, buildings and stands associated with race tracks, football stadiums, baseball parks, rodeo arenas, amusement parks, etc.
8. Miscellaneous high water use (To be used to indicate a high water use condition not covered by the above categories.)

UI - INDUSTRIAL (May be used alone when further breakdown is not required)

1. Manufacturing, assembling, and general processing
2. Extractive industries (oil fields, rock quarries, gravel pits, rock and gravel processing plants, etc.)
3. Storage and distribution (warehouses, substations, railroad marshalling yards, tank farm , etc.)
6. Saw mills
7. oil refineries
8. Paper mills
9. meat packing plants
10. Steel and aluminum mills
11. Fruit and vegetable canneries and general food processing
12. Miscellaneous high water use (To be used to indicate a high water use condition not covered by the above categories.)
13. Sewage treatment plant including ponds.
14. Waste accumulation sites (public dumps, sewage sludge sites, landfill and hazardous waste sites, etc..)
15. Wind farms, solar collectors farms, etc.

UL - URBAN LANDSCAPE (May be used atone when further breakdown is not required)

1. Lawn area -irrigated
2. Golf course -irrigated
3. Ornamental landscape (excluding lawns -irrigated
4. Cemeteries irrigated
5. Cemeteries not irrigated

UV - VACANT (May be used alone when further breakdown is not required)

1. Unpaved areas (vacant tots, graveled surfaces, play yards, developable open Lands within urban areas, etc.)
3. Railroad right of way.
4. Paved areas (parking tots, oiled surfaces, flood control channels, tennis court areas, auto sates tots, etc.)
6. Airport runways

Example: UV4-K Paved urban vacant with a freeway special condition. (The paved portion of the freeway right of way.)

NATIVE CLASSES (Do not precede with “n")

NC - NATIVE CLASSES UNSEGREGATED (May be used atone when further breakdown is not required)

NV - NATIVE VEGETATION (May be used alone when further breakdown is not required)

1. Grass land
2. Oak grass land
3. Light brush
4. Medium brush
5. Heavy brush
6. Brush and timber
7. Forest

NR - RIPARIAN VEGETATION May be used atone when further breakdown is not required)

1. marsh Lands, tules and sedges
2. Natural high water table meadow
3. Trees, shrubs or other larger stream side or watercourse vegetation
4. Seasonal duck marsh, dry or only partially wet during summer
5. Permanent duck marsh, flooded during summer

NW - WATER SURFACE - Lakes, reservoirs, rivers, canals, etc.

NB - BARREN AND WASTELAND (May be used alone when further breakdown is not required)

1. Dry stream channels
2. Mine Tailing
3. Barren land
4. Salt flats
5. Sand dunes

UNCLASSIFIED

NS - NOT SURVEYED

Area within the investigation area that was not mapped.

E - ENTRY DENIED

Z - This area is outside of the study area.

When any of the following special conditions, source of water, or type of irrigation is used a (-) should precede them. when more than one is used they should be used in the order stated above.

SPECIAL CONDITIONS
(only one can be used per parcel)

(A)ABANDONED ORCHARDS AND VINEYARDS

Trees or vines must be in such a condition that renewal of cultural practices would restore economic production. indicated by "A" following crop symbol. Example: 01-A Indicates an apple orchard previously irrigated but now abandoned.

(6) BURNED OVER AREAS

Indicated by "B". The type and density of natural cover destroyed by fire is obtained by examination of aerial photo. Example: NV2-8

(F) FALLOW LANDS

Must be disked or plowed at time of survey.

(1) If no crop residue is apparent or identifiable then the 'IF" symbol will follow the agricultural class symbol for the crop most representative of those grown in the area.
Example: T-F Fallow land within a truck crop area. (with facilities for irrigation)

(2) If the crop residue is apparent and identifiable but is not from the current crop season covered by the survey then the field is considered fallow and mapped as the class of the crop residue.
Example: Surveyor found an old sugar beet residue not from current season. Land would be mapped F-F.

(3) However, if the crop residue is identifiable as that of a crop which was grown during the survey period, then map the field as though crop existed.
Example: T6 - Carrot residue from current growing season.

(K) -FREEWAYS

Examples: UV-K Urban vacant, unsegregated, within the freeway right of way. UL3-K Urban Landscape within the freeway right of way.

(M)MILITARY AREAS (Use only with the URBAN classes)

Indicates land owned or controlled by the military and is used following the land use symbol.

Example: UR3-M Multiple family dwellings within a military area.

(R) RECREATIONAL
To be used with residential, commercial, vacant, R.V. parks and camp sites within primarily a seasonal recreational area.

(S) SEED CROP

Indicates any crop grown for seed and is used following crop symbol.
Example: P1-S Irrigated alfalfa seed crop.

(T) TILLED LANDS

A field prepared for immediate planting, or just newly planted, including the appearance of seed lines or unidentifiable tiny seedlings.
Example: T-T Tilled land in predominately a truck crop area.

(X) PARTIALLY IRRIGATED CROPS

Crops irrigated for only part of their normal irrigation season.
Example: P3-X Partially irrigated mixed pasture.

(Y)YOUNG NON-BEARING ORCHARDS AND VINEYARDS.

Follows crop symbol.
Example: C3-Y Young non-bearing irrigated oranges.

(Z) RECLAMATION

Land being Leached for the removal of harmful salts. This symbol will be used following either the –Idle

symbol or symbols of crops grown as a step in the reclamation process.
Examples I2-Z, or R-Z

MULTIPLE LAND USE

INTERCROPPING

Indicated by a fractional symbol. To be used With orchards or vineyards when intercropped with some other crop class, the orchard or vineyard symbol will appear in the numerator.
Example: D12-Y/FlO young almonds intercropped with dry beans.

DOUBLE CROPS

First crop indicated by enclosed parenthesis.
Examples: (G)F6 Irrigated grain followed by field corn.
(T24)T8 Cauliflower followed by Lettuce.

TRIPLE CROPS

First and second crop indicated by enclosed parenthesis.
Example: (T8)(T23)T8 Irrigated lettuce followed by
cabbage followed by Lettuce.

MIXED LAND USE

Indicated by percentages following land use symbols. No more than 3 symbols are to be used in describing the area. (Use in increments of 10%)

Example: D5 -40% irrigated peaches
40%
NV -20% Native vegetation
20%
UR -40% Urban residential
40%

TYPE OF IRRIGATION SYSTEM

G – Gravity - Using a surface irrigation system, such as furrows, borders, gated pipe, etc.

M - Micro - Including drip and micro-spray.

S - Sprinkler Including permanent and movable sprinkler systems.

U - Unknown

As part of the map symbols these irrigation type letters should include a circle around them so that they are not confused with the special condition letters.

Example: P3- 1 G irrigated pasture with stream as the water and gravity as the type of irrigation.

SOURCE OF IRRIGATION WATER

As part of the map symbols a circle should enclose each of the water source numbers. This symbol should be the last symbol in the land use code.

Water Source	code
Surface water	1
Mixed surface & ground water	2
Ground water	3
Unknown source	4

Example: P1- 3 irrigated alfalfa with a well as water source.

LEGEND REVISED 7/30/93 jb

ADDENDUM FILE STRUCTURE FOR ATT FILES

Structure for TYPE [it file named <luse.dbf>
Number of bytes per record : 67
Number of fields in record : 20
Date file was last updated : 3/28/95

Field	Label	Type	Size	Dec.	Offset
1	BL X	N	12	0	
2	BL Y	N	12	0	13
3	ACRES	N	13	3	25
4	WATERSOURC	C	1	0	38
5	MULTIUSE	C	1	0	39
6	CLASS1	C	2	0	40
7	SUBCLASS1	N	2	0	42
8	SPECOND1	C	1	0	44
9	IRR-TYP1	C	2	0	45
10	PCNT1	N	2	0	47
11	CLASS2	C	2	0	49
12	SUSCLASS2	N	2	0	51
13	SPECOND2	C	1	0	53
14	IRR-TYP2	C	2	0	54
15	PCNT2	N	2	0	56
16	CLASS3	C	2	0	58
17	SUSCLASS3	N	2	0	60
18	SPECOND3	C	1	0	62
19	IRR TYP3	C	2	0	63
20	PCNT3	N	2	0	65

Record size in bytes = 67

The DXF files have one and only one layer of tines each. Lines are of ACAD type LINE and POLYLINE only. There are no other drawing element types in the .DXF file.

For Problem or Information contact:

Steven L. Turner

Department of Fish and Game Natural Diversity Data Base

CALIFORNIA DEPARTMENT OF FISH AND GAME

CALIFORNIA NATURAL DIVERSITY DATABASE (NDDB) -- GIS METADATA

REVISION DATE: MARCH 22, 1996

COVERAGE NAME: NDDB

COVERAGE DESCRIPTION:
The coverage NDDB is an ARC/INFO prototype representation of the California Natural Diversity Data Base (NDDB), an inventory of recorded sightings of rare and endangered plant and animal species and natural communities in California. The data are depicted using the new ARC/INFO feature class REGIONS. Regions are complex features composed of one or many polygons, grouped together to represent one NDDB feature each.
This coverage is primarily intended for internal use by the Department of Fish and Game and its co-operators.

Description of DOUBLE precision coverage nddb

FEATURE CLASSES

Feature Class	Subclass	Number of Features	Attribute data (bytes)	Spatial Index?	Topology?
ARCS		130955	38		
POLYGONS		67019	24		Yes
NODES		79544			
REGIONS	EO	27390	62		Yes

SECONDARY FEATURES

Tics	8
Arc Segments	1453346

TOLERANCES

Fuzzy =	0.250 V	Dangle =	1.000 V

COVERAGE BOUNDARY

Xmin =	-374503.258	Xmax =	541296.067
Ymin =	-605514.434	Ymax =	450660.316

COORDINATE SYSTEM DESCRIPTION

Projection	ALBERS		
Units	METERS	Spheroid	CLARKE1866
Parameters:			
1st standard parallel			34 0 0.000
2nd standard parallel			40 30 0.000
central meridian			-120 0 0.00
latitude of projection's origin			0 0 0.000
false easting (meters)			0.00000
false northing (meters)			-4000000.0000

Description of SINGLE precision coverage nddbpnt

FEATURE CLASSES

Feature Class	Subclass	Number of Features	Attribute data (bytes)	Spatial Index?	Topology?
POINTS		30300	54		

SECONDARY FEATURES

Tics 8

TOLERANCES

Fuzzy = 105.617 N Dangle = 0.000 N

COVERAGE BOUNDARY

Xmin =	-374181.344	Xmax =	539700.563
Ymin =	-604514.188	Ymax =	449054.719

Projection information same as above.

NDDB OVERVIEW:
The individual species and communities in the NDDB are referred to as "Elements." An "Element Occurrence" (EO) is a locational record for a site which contains an individual, nest site, den, population or stand of a sensitive element. The exact definition of an element occurrence varies slightly by element type.

Each element is assigned an "Element Code" (ELCODE) and an "Element Occurrence Number" (EONUM). Element codes are standard ten-character (ten-byte) codes developed and maintained by the Nature Conservancy (TNC). Element occurrence numbers are assigned sequentially by element code as new occurrences are mapped. ELCODE and EONUM together constitute a primary key used in the native ORACLE database from which these data originate. In addition, an "Element Occurrence Index" (EONDX), a unique integer value, is assigned to each occurrence for use as a primary key in the ARC/INFO relate environment.

The geographic location of an element occurrence is represented by a "Map Index" (MAPNDX). Map index is spatially unique within the ARC/INFO regions coverage, because it represents an actual location. Several occurrences, however, often occupy the same geographic location, and hence, share the same map index. In this case, several EONDXs may share the same MAPNDX. This situation is referred to as a "Multiple" occurrence. Because MAPNDX represents a spatially unique location, all features which share that location will also have the same MAPNDX. In the region and point implementations of NDDB element occurrences at the same geographic location (multiples) will be represented by a separate ARC/INFO feature for each occurrence. For regions, this means that the same set of polygons which define a region for the first occurrence at a multiple will be redefined to also represent the second occurrence, and so on. For points, this means that subsequent occurrences will be represented as separate points, stacked one atop the other, all sharing the exact same coordinates. This situation creates a one-to-one relationship between the coverage attribute table and the related datafile. In other words, there is one spatial feature (region or point) for each record in the related datafile. This is not the case when using arc features. Since the NDDB coverage has been cleaned with the poly option, duplicate (or stacked) arcs cannot exist. For this reason, one arc may now represent the location of several element occurrences. This results in the a less flexible one-to-many relationship with the related datafile. The situation is further complicated by the fact that, since the coverage has been cleaned to create polygon/region topology, any arc which overlaps another has been segmented as intersections are created. This results in many arcs, where only one may have previously existed. See "Using the NDDB" later in this document for more detail.

There are four categories of elements: Special Plants (SP), Special Animals (SA), Terrestrial Communities (TC), and Aquatic Communities (AC). Although the specific definition of an element occurrence differs among the various elements, with few exceptions, most occurrences can be identified by one of the following general definitions.

1. Plants - A population or group of populations found within one quarter-mile of the referenced location and not separated by significant habitat discontinuities.

2. Animals With Limited Mobility (most invertebrates, amphibians, reptiles, small mammals, and resident birds) - The location from which a specimen was collected, or an observation. This is assumed to represent a sample of a breeding population. Other records within one quarter-mile of the referenced location are included.

3. Mobile Animals - (migratory birds and larger mammals) - The location of breeding areas (including nesting territories, dens, and leks) or parts of the range of a mobile population. This may include roosts, over wintering areas, staging areas, etc.

4. Mobile Aquatic Animals - The location from which a specimen was collected (taken to represent a sample of a population). It may include other sites upstream and downstream which are not separated by a major habitat discontinuity or a physical barrier.

5. Terrestrial Communities - A documented location of a stand of vegetation or nonplant-dominated community element (e.g., alkali playa or desert dune). As with plants, nearby sites are included if they fall within one quarter-mile of the referenced location.

6. Aquatic Communities - A documented location of contiguous habitat as defined by physical and biotic features.

Source: DFG NHD California Natural Diversity Database (NDDB)
Source Media: coverage nddb
Source Projection: standard Teale albers
Source Units: meters
Source Scale: 1:24,000
Capture Method: ARC/INFO reselect, joinitem, export processes
Data Updated: continuously

DATA DICTIONARY:

The NDDB coverage contains both a region attribute table (nddb.pateo) and an arc attribute table (nddb.aat). To assign a name for the region attribute table, ARC/INFO appends the name for the region sub-class (in this case, eo - for element occurrence) to the .pat suffix, thus the table name nddb.pateo.

The NDDBPNT coverage contains a point attribute table.

Three other data tables are also included:

Table name	Contents
nddb_eo.df	Principle items and codes used for most queries
nddb_com.df	Comments and other long fields not normally searched
nddb_ftr.df	Geographic location information

These tables may be accessed using the included relates. More detail regarding the use of relates is included later in this document.

Alternate item names reflect old item names which may still be familiar to some users. Because ARC/INFO recognizes both the item name and the alternate

name, applications designed to use the old names will still function. It is recommended that the new names be used in developing new applications.

For best performance, indexes should be maintained as noted, using the ARC indexitem command.

NDDB.PATEO

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	ALTERNATE NAME	INDEXED?
1	AREA	4	12	F	3		-
5	PERIMETER	4	12	F	3		-
9	EO#	4	5	B	-		-
13	EO-ID	4	5	B	-		-
17	RINGS	7	7	I	-		-
24	MAPNDX	5	5	C	-	MAP_NDX	Indexed
29	EONDX	6	6	I	-		Indexed
35	ELCODE	10	10	C	-	ELM_CODE	-
45	EONUM	3	3	I	-	OCC_NUMBER	-
48	ELTYPE_CODE	1	1	I	-		-
49	PRECISION_CODE	2	2	I	-		-
51	EOCOUNT	2	2	I	-		-
**	REDEFINED ITEMS **						
48	LUCODE	5	5	I	-		-

NDDB.AAT

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	ALTERNATE NAME	INDEXED?
1	FNODE#	4	5	B	-		-
5	TNODE#	4	5	B	-		-
9	LPOLY#	4	5	B	-		-
13	RPOLY#	4	5	B	-		-
17	LENGTH	4	12	F	3		-
21	NDDB#	4	5	B	-		-
25	NDDB-ID	4	5	B	-		-
29	MAPNDX	5	5	C	-	MAP_NDX	Indexed
34	RINGS	7	7	I	-		-
41	PRECISION_CODE	2	2	I	-		-
43	EOCOUNT	2	2	I	-		-
45	SYMBOL	3	3	I	-		-

NDDBPNT.PAT

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	ALTERNATE NAME	INDEXED?
1	AREA	4	12	F	3		-
5	PERIMETER	4	12	F	3		-
9	NDDBPNT#	4	5	B	-		-
13	NDDBPNT-ID	4	5	B	-		-
17	MAPNDX	5	5	C	-	MAP_NDX	Indexed
22	EONDX	6	6	I	-		Indexed
28	RINGS	7	7	I	-		-
35	ELCODE	10	10	C	-	ELM_CODE	-
45	EONUM	3	3	I	-	OCC_NUMBER	-
48	ELTYPE_CODE	1	1	I	-		-
49	PRECISION_CODE	2	2	I	-		-
51	EOCOUNT	2	2	I	-		-
**	REDEFINED ITEMS **						
48	LUCODE	5	5	I	-		-

NDDB_EO.DF

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	ALTERNATE NAME	INDEXED?
1	EONDX	6	6	I	-		Indexed
7	MAPNDX	5	5	C	-	MAP_NDX	Indexed
12	ELCODE	10	10	C	-	ELM_CODE	-
22	EONUM	3	3	I	-	OCC_NUMBER	-
25	SNAME	60	60	C	-		-
85	CNAME	60	60	C	-		-
145	GRANK	6	6	C	-		-
151	SRANK	6	6	C	-		-
157	FEDLIST_CODE	4	4	I	-	USESA_CODE	-
161	CALLIST_CODE	1	1	I	-	CAL_CODE	-
162	LASTOBS	8	8	C	-	ELM_DATE	-
170	SURVEYDATE	8	8	C	-	SITE_DATE	-
178	PRESENCE_CODE	1	1	I	-	PRESENCE_ID	-
179	DATASENS	1	1	C	-	SENSITIVE	-
180	EORANK_CODE	1	1	C	-	OCCRANK_ID	-
181	ORIGIN_CODE	1	1	C	-	OCCTYPE_ID	-
182	TREND_CODE	1	1	I	-	TREND_ID	-

NDDB_COM.DF

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	ALTERNATE NAME	INDEXED?
1	EONDX	6	6	I	-		Indexed
7	MAINSOURCE	40	40	C	-	MAININFO	-
47	GENHAB	120	120	C	-	GEN_HAB	-
167	MICROHAB	120	120	C	-		-
287	DIRECTIONS	120	120	C	-		-
407	THRTCOM	120	120	C	-	THREAT_COM	-
527	ECOCOM	240	240	C	-	ECO_COM	-
767	DISTCOM	240	240	C	-	DIST_COM	-
1007	GENCOM	240	240	C	-	GEN_COM	-

NDDB_FTR.DF

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	ALTERNATE NAME	INDEXED?
1	EONDX	6	6	I	-		Indexed
7	MAINHAB	10	10	C	-	COMMUNITY_ID	-
17	KEYQUAD	7	7	C	-		-
24	TOWNSHIP	3	3	C	-		-
27	RANGE	3	3	C	-		-
30	SECTION	2	2	C	-		-
32	QUARTER	2	2	C	-		-
34	MERIDIAN	1	1	C	-		-
35	ELEVATION	5	5	I	-		-
40	OWNER	30	30	C	-	OWNER_MGMT	-

NOTE: Items common to all ARC/INFO coverages: LENGTH, AREA, PERIMETER, COVER_ (#), and COVER_ID (-ID) are not described here. This coverage and its related data files contain only a subset of the complete NDDB data structure.

DESCRIPTION OF ITEMS (fields)

NDDB.PATEO: Region Attribute Table

RINGS: Reports the number of components (rather than polygons) that make up each geographic location or MAPNDX. Usually a MAPNDX is composed of one RING. In some cases, however, the MAPNDX may be composed of a complex of disjunct parts (a vernal pool complex, for example). In these cases RINGS reports the number of components contained in the complex. An element occurrence at this MAPNDX will still be represented by a single REGION and single EONDX.

EONDX: Element Occurrence Index. An integer primary key (unique for each record) used as a relate item for ARC/INFO relates. Although EONDX is assigned sequentially, gaps may appear as records are merged or updated.

MAPNDX: Map Index. Uniquely identifies a geographic location. This location may consist of several unconnected features contained in a complex. More than one element occurrence may occur at a given MAPNDX, creating a situation known as a "multiple". For this reason, MAPNDX is NOT unique for each record. When using feature class ARC (rather than feature class REGION.EO), however, MAPNDX is used as a relate item. This results in a one-to-many relationship between the coverage attribute table and the related data file. Although MAPNDX is assigned sequentially, gaps may appear as records are merged or updated.

ELCODE: Element code. A ten-character (ten-byte) code assigned to each element by The Nature Conservancy (TNC) for data management purposes. An outline of the upper levels of classifications is presented below. Complete coding information is contained in the Natural Heritage Program Operations Manual TNC, Arlington, Virginia, April 1982, revised June 1988. An example code follows the outline.

Element Group (Byte 1 = first position in ten-column ELCODE field)

Item value	Meaning
A	Vertebrate animal
P	Vascular plant
I	Invertebrate animal
N	Non-vascular plant
C	Community (as in Natural Community or plant community)
O	Other (State trees etc. not used in CA NDDB)
G	Geologic (not used in CA NDDB)

Plants and other kingdoms (Bytes 1,2,3,4,5):

NAALG	Algae
NFFUN	Fungi
NL	Lichens (followed by three-letter acronym of Order name)
NLLEC	Lichens, Order Lecanorales (for example)
NBMUS	Bryophytes--Musci (the mosses)
NBHEP	Bryophytes--Hepaticae (liverworts)
NBANT	Bryophytes--Anthoceratae (hornworts)

Vascular Plants (Bytes 3,4,5 are acronyms of Family name.
example: PDAST -- Asteraceae, the Sunflower Family)

PP	Pteridophytes (ferns)
PG	Gymnosperms (conifers and others)
PD	Dicots (broadleafed plants)
PM	Monocots (grasses, palms, and others)

Vertebrate Animals (Bytes 1,2,3):

AMA	Mammals (Byte 3 is a placeholder, always = A)
AB	Birds
ABP	Passerine (perching) Birds
ABN	Non-passerine Birds
ARA	Reptiles (Byte 3 is a placeholder, always = A)
AAA	Amphibians (Byte 3 is a placeholder, always = A)
AF	Fish (Byte 3 is Class: A, B, C as shown below)
AFA	Lampreys and hagfish
AFB	Sharks and rays
AFC	Bony fishes

Vertebrate Animals, continued: (Bytes 4 through 10 are sequential codes as assigned in TNC-designated publications, contact NHD): Byte 4, Order; Byte 5, Family; Bytes 6&7, Genus; Bytes 8&9, Species; Byte 10, Subspecies

Invertebrates (Bytes 1,2,3,4,5):

IZPRT	Protozoans
IZPLA	Placozoa
IZSPN	Porifera (sponges)
ID	Cndarians (Coelenterata) (Class HYD,SCY,ANT)
IDCTE	Ctenophores
IP	Flatworms (Class TUR,TRE,CES)
INNEM	Nemerteans
IK	Aschelminths (Phylum GAS,KIN,NEM,KMA,ACA,GNA)
IM	Mollusks (Class GAS,MON,POL,BIV,SCA,CEP)
IA	Annelids (worms)(Class POL,OLI,HIR)
IL	Chelicerates (Class MER,ARA (spiders),HIR)
IC	Crustaceans (Subclass CEP,BRA,OST,COP,MAB(M&B),CIR,MAL)
ITUNI	Uniramian arthropods (except insects)
II	Insects (Order PRO,THS,CLL,EPH(mayflies),ODO(dragonflies) ORT(grasshoppers),ISO,PLE(stoneflies),DER,EMB, PSO,ZOR,MAL,ANO,THY,HEM(true bugs),HOM(aphids), NEU,COL(beetles),STR,MEC,LEP(butterflies&moths), DIP(flies),HYM(bees,wasps,ants),SIP)
IRPRT	Lesser Protosomes
IGLOP	Lophoporates
IEECH	Echinoderms
IWDEU	Lesser Deuterosomes

Example coding for the Black-Crowned Night Heron, ELCODE = ABNGA11010:

Byte(s)	Code	Meaning
1	A	Animal, vertebrate (code A is an acronym)
2	B	Bird (acronym)
3	N	Non-passerine (acronym)
4	G	Order Ciconiiformes (code G is 6th in sequential list)
5	A	Family Ardeidae (code A is first in sequential list)
6,7	11	Genus Nycticorax (code 11 is eleventh in sequential list)
8,9	01	Species nycticorax (sequential)
10	0	Subspecies (0 = not a subspecies; else, >0 = sequential)

Natural Community ELCODE structure as implemented in the California NDDB was developed by Robert Holland (see NHD publications list):

Terrestrial Communities

Byte(s)	Code	Meaning
1	C	Community, as in Natural Community (code C is an acronym)
2	T	Terrestrial, vegetation- or feature-based (acronym)
3	T	A placeholder (for Terrestrial communities, always = T)
%%categories		in bytes 4 thru 8 below under review by NHD%%
4	n	Physiognomy (sequential, n = 1,2,3,...) physical category
5	n	Formation (sequential, n = 1,2,3...)
6	n	Habitat Type (sequential, n = 1,2,3,..A,B.., in some cases)
7	n	Community Type (sequential, n = 1,2,3,...)
8	n	Plant Association (sequential, n = 1,2,3,...) dominant spp.
9,10	CA	designates State of California NDDB natural community code
Examples:		CTT35410CA - Mono Pumice Flat
		CTT71130CA - Valley Oak Woodland
		CTT21330CA - Southern Dune Scrub

Aquatic Communities

Byte(s)	Codes	Meaning
1	C	Community, as in Natural Community (code C is an acronym)
2	A	Aquatic (acronym)
3	R	Riverine, pertaining to flowing waters (acronym)
	P	Palustrine, pertaining to marshes and wetlands (acronym)
	L	Lacustrine, pertaining to lakes, standing waters (acronym)
	E	Estuarine, estuaries (acronym, not currently in use in CA)
	M	Marine, ocean (acronym, not currently in use in CA)
4	A	Sacramento-San Joaquin Province (see Moyle and Ellison, 1981. Classification of CA's Inland Waters) (sequential)
	B	Klamath and North Coast Province
	C	Great Basin Province
	D	Colorado River Province
	E	Southern California Coastal Province
5	1	Standing Waters (sequential, hierarchical)
	2	Flowing Waters
6	1	Ephemeral Waters
	2	Permanent Waters
7,8	1n	Types of fishless streams (sequential, n = 0,1,2,3...)
	nn	Types of streams containing fish (nn = 20,21,..31,32..)
9,10	CA	designates State of California NDDB natural community code

Examples: CARA2333CA - Pit River Drainage Modoc Sucker Stream
CAPC1352CA - Cottonball Marsh
CALA1310CA - Goose Lake

EONUM: Element Occurrence Number. The occurrence number which uniquely identifies a particular instance of a species or community. Occurrence numbers are assigned sequentially as the occurrence is mapped. The first instance mapped for an element is #1, the eighteenth location is #18, etc. There may be gaps in the number sequence as occurrences are combined. Taken together, ELCODE and EONUM form a primary key to the CA NDDB.

ELTYPE_CODE: Element Type.

Code	Description
1	Plant
2	Animal
3	Terrestrial community
4	Aquatic community

PRECISION_CODE: Relative confidence level of mapping accuracy for this occurrence (from most accurate to least accurate).

Code	Description
1	Specific bounded area with an 80 meter radius
2	Specific bounded area
3	Non-specific bounded area
4	Circular feature with a 1/5 mile radius
5	Circular feature with a 2/5 mile radius
6	Circular feature with a 3/5 mile radius
7	Circular feature with a 4/5 mile radius
8	Circular feature with a 1 mile radius

EOCOUNT: The number of occurrences which share a given MAPNDX. An EOCOUNT greater than one indicates the presence of a "multiple".

SYMBOL: The ARC/INFO symbol number, taken from lineset COLOR.LIN, used to draw the feature. The SYMBOLITEM command in ARCEDIT must be issued to make these symbols active. Correct syntax for the command is: SYMBOLITEM region.eo symbol.

NDDB.AAT Arc attribute table

Item descriptions are the same as items for NDDB.PATEO. Does not contain EONDX, ELCODE, EONUM or ELTYPE_CODE.

NDDBPNT.PAT Point attribute table

Item descriptions are the same as items for NDDB.PATEO

NDDB_EO.DF Occurrence Specific Information

EONDX: See description under NDDB.PATEO above.

MAPNDX: See description under NDDB.PATEO above.

ELCODE: See description under NDDB.PATEO above.

EONUM: See description under NDDB.PATEO above.

SNAME: State Name. The scientific (Latin) name of a plant or animal or the name of a Natural Community recognized at the state level.

CNAME: The common name of an element, recognized at the the state level. CNAME value for Natural Communities is the same as that for SNAME.

GRANK: The global rank reflects overall condition (rarity and endangerment) of an element throughout its range. Ranks are assigned by the NDDB biological staff following review of all available information.

item value	meaning (at species or Natural Community level)
G1	Less than 6 Element Occurrences (EO) OR less than 1,000 individuals OR less than 2000 acres:
G2	6 - 20 EOs OR 1,000 - 3,000 individuals OR 2,000 - 10,000 acres
G3	21 - 100 EOs OR 3,000 - 10,000 individuals OR 10,000 - 50,000 acres
G4	Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern; i.e. there is some threat, or somewhat narrow habitat.
G5	Population or stand demonstrably secure to ineradicable due to being commonly found in the world.
GnTn	Subspecies receive a T-rank attached to the G-rank. With the subspecies, the G-rank reflects the condition of the entire species, whereas the T-rank reflects the global situation of just the subspecies; where n = 1,2,3,4,5 as described above.

SRANK: The state rank reflects condition (rarity and endangerment) of an element within the State of California. Ranks may be combined e.g. S1S2

item value	meaning
S1	Less than 6 Element Occurrences (EO) OR less than 1,000 individuals OR less than 2000 acres:
S1.1	Very threatened
S1.2	Threatened
S1.3	No current threats known
S2	6 - 20 EOs OR 1,000 - 3,000 individuals OR 2,000 - 10,000 acres
S2.1	Very threatened
S2.2	Threatened

S2.3	No current threats known
S3	21 - 100 EOs OR 3,000 - 10,000 individuals OR 10,000 - 50,000 acres
S3.1	Very threatened
S3.2	Threatened
S3.3	No current threats known
S4	Apparently secure within California; this rank is clearly lower than S3 but factors exist to cause some concern; i.e. there is some threat, or somewhat narrow habitat. NO THREAT RANK.
S5	Demonstrably secure to ineradicable in California. NO THREAT RANK.

FEDLIST_CODE: U.S. legal status under Federal Endangered Species Act (ESA):

Code	Description
1	Federally-listed Endangered
2	Federally-listed Threatened
3	Species of Concern, former Category 1
4	Species of Concern, former Category 2
5	Category 3A, withdrawn from candidacy for Fed listing (extinction)
6	Category 3B, withdrawn from candidacy for Fed listing (taxonomic question)
7	Category 3C, withdrawn from candidacy for Fed listing (too common)
8	Proposed for Federal Listing as Endangered
9	Proposed for Federal Listing as Threatened
10	None, not classified
11	Category 2R, recommended for inclusion in the Federal register
12	Species of Concern, former Category 1* (believed extinct)
13	Species of Concern, former Category 2* (believed extinct)
14	Candidate for Federal listing

(See Federal Register for legal definitions of Federal status)

CALLIST_CODE: California legal status

Code	Description
1	California-listed Endangered
2	California-listed Threatened
3	California-listed Rare
4	Candidate. Officially recognized by the California Fish and Game Commission as under consideration for addition to the State Threatened or Endangered list. Candidate species are also protected from taking.
5	None. Not classified

LASTOBS: Last Observed. The most recent date that an observer actually saw the element at this site according to available information.
Format: yyyymmdd; XX to XXXXXXXX = date component(s) undetermined

SURVEYDATE: Survey Date. The most recent date that an observer visited the site, according to information available to the NDDB staff.
Format: yyyymmdd; XX to XXXXXXXX = date component(s) undetermined

PRESENCE_CODE: Refers to the condition of the occurrence at the site when it was last observed.

Code	Description
1	Presumed Extant - The most common entry. An occurrence is presumed to still be in existence until evidence to the contrary is received by the NDDB.
2	Possibly Extirpated This Site - Evidence of habitat destruction, or population extirpation has been received by the NDDB for this site, but questions remain as to whether the element still exists.
3	Extirpated - Only used when the element has been searched for but not seen for many years or when the habitat is destroyed at this site.

DATASENS: Data Sensitive. Logical field (Yes/No) regarding data contained in record:
Y = record contains sensitive data--INFORMATION MUST NOT BE DISTRIBUTED OUTSIDE OF DEPARTMENT OF FISH AND GAME.
N = does not contain sensitive data, normal distribution policy applies.

EORANK_CODE: Element Occurrence Rank. Ranks occurrence quality.

Code	Description
A	Excellent
B	Good
C	Fair
D	Poor
X	None
U	Unknown

ORIGIN_CODE: Indicates the occurrence origin.

Code	Description
N	Native
R	Refugium
I	Reintroduction
T	Transplant

TREND_CODE: Indicates population trend at this site.

Code	Description
1	Increasing
2	Stable
3	Decreasing
4	Fluctuating
5	Unknown

NDDB_COM.DF Comments

EONDX: See description under NDDB.PATEO above.

MAINSOURCE: Document Codes. Citation for the primary information source of information for this occurrence.

GENHAB: Information on the general habitat with which the element is associated.

MICROHAB: Where known, a description of the microhabitat with which the occurrence is associated.

DIRECTIONS: Description of the location of the element occurrence.

THRTCOM: Comments about threats to this element at this site.

ECOCOM: Comments on ecological conditions at the population/stand. Can include information on associated species, physical characteristics of site, etc.

DISTCOM: Additional information about the location/distribution of an element occurrence. Best read after DIRECTIONS.

GENCOM: Comments about an element occurrence that didn't fit physically or topically in the other comments fields.

NDDB_FTR.DF Location specific information

EONDX: See description under NDDB.PATEO above.

MAINHAB: Main Habitat. Principal habitat with which the element is associated expressed as the ELCODE of a natural community.

KEYQUAD: The USGS 7.5 minute quadrangle map which contains the centroid of this occurrence. This code is expressed as a modified USGS code consisting of one degree blocks sub-divided into sixty-four 7.5 minute maps. The one degree block is referenced by the latitude and longitude of its southeast corner (ie: 38121). Individual maps within the block are referenced by an alpha-numeric code. this code originates at the same southeast corner as the one degree block and runs numerically east to west, and alphabetically south to north. This creates a grid allowing maps to be coded by the intersection of these axis (ie: B5). A complete map code would be 38121B5. The CNDDB QUADCODE converts this value to an integer by replacing the alpha character with a numeric equivalent (ie: A = 1, H = 8). This renders the KEYQUAD code for the above example 3812125.

TOWNSHIP: Township where the center of the occurrence is most likely to be located.

RANGE: Range.

SECTION: Section number.

QUARTER: Given if the half section or quarter section has been determined.

MERIDIAN: This field contains either "M," "H," or "S." These letters refer to Mt. Diablo, Humboldt, or San Bernardino baseline and meridians, respectively. Meridians are necessary to indicate a unique township, range, and section coordinate.

ELEVATION: The elevation in feet. This field remains blank for many "non-specific" occurrences when the exact placement of the center point is somewhat arbitrary.

OWNER: The type of ownership of the site; private, public (U.S. Forest Service, Bureau of Land Management, etc.), conservation organization etc., if known.

-----end data dictionary------

USING THE NDDB:

The NDDB ARC/INFO coverage is available for use in three different feature classes, REGIONS, ARCS and POINTS. Regions and arcs are stored in the coverage NDDB. Points are stored in the coverage NDDBPNT. ARC/INFO points and polygons (and by extension regions) cannot be stored in the same coverage, hence the need for two separate datasets.

The best and most accurate representation of the CNDDB is obtained by using the REGION feature class in the coverage NDDB. Regions are complex features composed of one or more polygons (see the ARC/INFO help menu for more information about regions). Each region represents one element occurrence. The region model works for users of both ARC/INFO 7.0x and ArcView.

The NDDBPNT coverage can be used in situations where small scale mapping is desired. It is also useful for users of ArcView on PCs because of its smaller size. It should be noted, however, that all occurrences in the CNDDB have areal extent. Those occurrences represented by specific or non-specific bounded areas (precision_codes 1-3) will be misrepresented by the use of point features, which cannot possibly depict the size and shape of the occurrence.

Edit feature ARC from the NDDB coverage is the least useful and should only be used only in situations where system performance issues preclude the use of the overhead intensive region feature class.

The following example demonstrates how to set up an editing session for the NDDB in ARCEDIT:

Note: The region feature class cannot be used alone; a subclass must be specified. Presently the NDDB contains only one subclass, EO (element occurrence). In cases where an ARCEDIT or ARCPLOT command expects a feature class (ie: ARC, POLY) for REGION the subclass must also be given (REGION.EO).

```
Arcedit: display 9999 size frame 750 850 position 0 0
Arcedit: relate restore $NDDBHOME/nddb.relates
Arcedit: edit nddb region.eo
Arcedit: symbolitem region.eo line//symbol
Arcedit: drawenv region.eo
Arcedit: draw
```

NOTE: To use the defined NDDB relates, create a environment variable for $NDDBHOME in your .cshrc or .profile as follows:

```
setenv NDDBHOME <current install path>
or
NDDBHOME = <current install path>
export NDDBHOME
```

Use of DRAWENVIRONMENT REGION.EO FILL is not recommended for NDDB.

When using SYMBOLITEM region.eo line//symbol, line colors and line styles have been assigned based on the following criteria:

Line colors are assigned based on eltype_code:

eltype_code	description	color
1	plant	green
2	animal	red
3	terrestrial community	purple
4	aquatic community	cyan
	multiples	white

Line styles are assigned based on three classes, determined by precision_code:

```
specific bounded areas (precision_code 1 & 2).... solid
non-specific bounded areas (precision_code 3).... dashed
circular features (precision_code 4-8)........... dotted
```

Based on combinations of eltype_code and precision_code, the following line symbols have been assigned (using the ARCEDIT default lineset, color.lin):

Specific bounded areas (precision_code 1 & 2): solid line

eltype_code	description	color	symbol
1	plant	green	3
2	animal	red	2
3	terrestrial community	purple	6
4	aquatic community	cyan	5
	multiples	white	1

Non-specific bounded areas (precision_code 3): dashed line

eltype_code	description	color	symbol
1	plant	green	35
2	animal	red	34
3	terrestrial community	purple	38
4	aquatic community	cyan	37
	multiples	white	33

Circular features (precision_code 4-8): dotted line

eltype_code	description	color	symbol
1	plant	green	19
2	animal	red	18
3	terrestrial community	purple	22
4	aquatic community	cyan	21
	multiples	white	17

Combinations of these possiblities have been stored in a look-up table as LUCODE, which relates to a redefined item in the coverage attribute table. This redefined item includes ELTYPE_CODE, PRECISION_CODE and EOCOUNT. For example:

| 1 | 04 | 01 | (10401) indicates ELTYPE_CODE 1 (plant), PRECISION_CODE 4 (circular feature with 1/5 mile radius), and EOCOUNT 1 (only one occurrence at this location).

NDDB_LINE.LUT Contains the following items:

NDDB_LINE.LUT

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	ALTERNATE NAME	INDEXED?
1	LUCODE	5	5	I	-		-
6	SYMBOL	3	3	I	-		-
9	ELTYPE_CODE	1	1	I	-		-
10	PRECISION_CODE	2	2	I	-		-
12	TEXT	50	50	C	-		-

Restoring the nddb.relates file sets up the following relates:

```
Relate Name:        EO
Table:              $NDDBHOME/info!arc!nddb_eo.df
Database:           info
Item:               EONDX
Column:             eondx
Relate Type:        ORDERED
Relate Access:      RO

Relate Name:        COM
Table:              $NDDBHOME/info!arc!nddb_com.df
Database:           info
Item:               EONDX
Column:             eondx
Relate Type:        ORDERED
Relate Access:      RO

Relate Name:        FTR
Table:              $NDDBHOME/info!arc!nddb_ftr.df
Database:           info
Item:               EONDX
Column:             eondx
Relate Type:        ORDERED
Relate Access:      RO

Relate Name:        MAP
Table:              $NDDBHOME/info!arc!nddb_eo.df
Database:           info
Item:               MAPNDX
Column:             mapndx
Relate Type:        ORDERED
Relate Access:      RO
```

Relate Name: LINE
Table: $NDDBHOME/info!arc!nddb_line.lut
Database: info
Item: LUCODE
Column: lucode
Relate Type: TABLE
Relate Access: RO

Use relates EO, COM or FTR when using feature class REGION.EO or POINT. Relates made in this manner will be one-to-one.
Use relate MAP when using feature class ARC. You can stack the other relates two deep atop relate MAP. Note than any relates using feature class ARC will result in a one-to-many situation and must be handled using cursors (FORMS does this for you quite well for browsing purposes). See the ARC/INFO help menu for more information about the relate environment and managing on-to-many relationships.

SELECTING REGIONS:
When selecting REGIONS it will be easiest to use the SELECT MANY command, since the polygon where you place your curser for selection may belong to more than one region. You may then use the NEXT option to step through all regions which share that polygon.
When selecting MULTIPLES use the SELECT MANY command, continuing to select in the same location until no more features are found. This way all occurrences that share a common map index will be selected. This may be verified by comparing EOCOUNT with the number of features selected.
Selecting by BOX, POLY or SCREEN will select all occurrences (including multiples) within the selection area.

SELECTING POINTS:
When selecting points it may be easier to use SELECT BOX for selecting MULTIPLES rather than SELECT MANY.

SELECTING ARCS:
When selecting ARCS it should be remembered that MULTIPLES are represented by single arcs, not stacked features like regions or points. Also, because arcs have been segmented during topology creation, most times only one arc belonging to a given MAPNDX will be selected. Other than not being able to DRAWSELECT the entire MAPNDX, this is not necessarily bad. Selecting all the segments may improve display, but values will be duplicated.

DATA QUALITY ASSESSMENT:
RAREFIND and Workstation ARC/INFO versions of the NDDB contain full record information pertaining to the quality of the biological observations and interpretations. All NDDB data are continuously updated and subject to change.

Since several element occurrences may be found at the same geographic location, a one-to-many (or sometimes many-to-many) relationship exists between map_ndx in the coverage attribute tables and map_ndx in the NDDBDATA.DF file. To create a less complex data set based on some criteria from the data file, you can use a reselect statement in ARCPLOT to create a keyfile from the data file, then use the keyfile to reselect the features from the coverage, create a writeselect file of the selected set, and then use the ARC reselect command to extract features from the main coverage. Do this for both point and line features. Here is an example of how this might be done to extract a subset of features for elm_code = ABNKC12060:

USING NDDB IN ARCPLOT:

In general, using regions in ARCPLOT is very similar to using polygons. Most commands for displaying or querying polygons have their regions equivalent (ie. polys - regions, polygonshades - regionshades etc.) In most cases the subclass must be included as an additional argument. The RESELECT command requires that the feature class also include the sub-class (REGION.EO). Because the region and point versions maintain a one-to-one relationship with the related data files, most operations are very straight forward (be sure to restore the relates first). When using the arc feature class, however, special measures must be taken. Because the arc model is in the form of a one-to-many (or a many-to-many) relationship, relates must be managed through the use of cursors or KEYFILE reselects. (See the ARC help menu for more information about cursors.) By far the simplest method is to use a KEYFILE reselect. Make an initial reselection from the datafile (rather than the attribute table) then reselect from the coverage using the first subset as a selecting keyfile.

```
Arcplot:  mapext nddb
Arcplot:  resel nddb_eo.df info elcode = 'ABNKC12060'
Arcplot:  resel nddb arc keyfile nddb_eo.df mapndx
Arcplot:  arcs nddb
```

This method can also be used in situations where spatial subsets of the coverage have been made (using PUT for ARCEDIT, WRITESELECT from ARCPLOT or CLIP etc. from ARC) and a sub-setted datafile is desired.

```
Arcplot:  reselect nddb_eo.df info keyfile subset_coverage eondx
Arcplot:  infofile info subset_eo.df
```

See the command reference for the ARCPLOT RESELECT and INFOFILE commands for more information about keyfile reselects and creating new info files.

RESPONSIBILITY FOR DATA ACCURACY AND UPDATES:

NHD Ecology Staff (scientific content and updating of the NDDB):

Ken Hashagen, Natural Heritage Program Coordinator
California Department of Fish and Game
Natural Heritage Division
1220 "S" Street
Sacramento, California 95814
916-327-0712
916-324-0475 FAX
khashage@gishost.dfg.ca.gov

NHD GIS Staff (spatial analysis and accuracy of the NDDB):

Joe Carboni, GIS Coordinator
Natural Heritage Division
916-322-2495
jcarboni@gishost.dfg.ca.gov

NDDB -- Workstation ARC/INFO applications:

Patrick Gaul, GIS Analyst
Natural Heritage Division
916-322-1950
pgaul@gishost.dfg.ca.gov

Michael Tuffly, GIS Analyist
California Department of Fish and Game, NHD
1416 9th Street, 12th floor
Sacramento, CA 95814
phone (916) 445 - 6264
fax (916) 324 - 0475
mtuffly@gishost.dfg.ca.gov

PC-ARC/INFO - ARCVIEW applications:

Paul Veisze, Spatial Data Coordinator
Technical Services Branch
1730 "I" Street, Suite 100
Sacramento, California 95814
916-323-1667
916-323-1431 FAX
pveisze@dfg.ca.gov

Complete NDDB record information may be
accessed with RAREFIND software for personal computers or by contacting:

California Department of Fish and Game
Natural Heritage Division
Natural Diversity Data Base (NDDB)-- %% Information Services %%
1416 Ninth Street
Sacramento, California 95814

NHD Offices are also located at
1220 "S" Street
Sacramento, California 95814
916-324-3812

==========

Appendix C. Aerial Photography Index

National Aerial Photography Program (NAPP) photos used to verify satellite imagery

Roll #	Frame #	Project Area		Roll #	Frame #	Project Area
459	38	3		472	123	3
459	74	3		473	138	4
459	108	3		473	144	4
459	123	3		472	128	3
459	151	3		476	33	3
460	6	3		478	145	3
460	12	3		492	42	4
460	49	3		494	60	3
460	57	3		506	29	3
460	101	3		506	38	3
460	108	3		506	71	3
460	109	3		506	79	3
460	110	3		506	83	3
460	136	3		506	126	2
460	138	3		506	144	3
460	148	3		506	145	3
460	151	3		506	148	3
461	31	3		506	168	3
461	33	4		506	182	2
461	48	4		506	184	2
461	119	3		506	200	1
461	122	3		507	6	1
461	125	3		507	24	2
461	127	3		507	26	2
461	129	3		507	44	3
462	1	3		507	46	3
462	5	3		507	47	3
462	14	3		507	59	3
462	16	3		507	63	3
462	18	3		507	73	2
462	59	3		507	77	2
462	68	3		511	32	2
462	129	4		511	98	2
462	130	4		511	100	2
462	175	4		511	106	2
462	180	4		511	119	2
462	188	4		511	181	2
463	21	4		513	38	2
463	27	4		513	83	2
463	28	4		513	95	2
463	37	4		514	4	1
463	70	4		514	5	1
463	73	4		514	22	2
463	80	4		514	34	2
472	102	3		514	36	3
472	108	4		514	42	3
472	110	4		514	54	2
472	116	4		514	64	1
472	119	4		515	4	1
Roll #	**Frame #**	**Project Area**		**Roll #**	**Frame #**	**Project Area**
515	5	1		516	193	2
515	36	2		517	10	2
515	38	2		517	29	1
515	41	2		517	45	1
515	44	2		517	46	1
515	46	2		517	47	1
515	48	2		518	39	2
515	52	3		518	41	2
515	69	3		518	56	2
515	70	2		518	58	2
515	72	2		518	87	2
515	87	1		518	91	2
515	104	1		518	192	2
515	110	1		521	3	1
515	116	1		521	4	1
515	117	1		521	5	1
515	135	1		521	59	1
515	160	2		521	60	1
515	167	2		521	61	1
515	187	3		521	77	1
515	192	3		521	78	1
515	194	2		521	79	1
515	195	2		521	81	1
515	199	2		524	63	2
515	201	2		524	97	2
516	6	1		524	101	2
516	9	1		524	151	1
516	10	1		524	152	1
516	16	1		524	154	1
516	27	1		525	27	3
516	35	1		527	17	1
516	36	1		529	21	2
516	41	1		530	14	2

516	55	1		531	12	3
516	56	1		532	45	2
516	89	1		532	47	2
516	90	1		532	55	2
516	96	2		532	57	2
516	101	2		532	59	2
516	103	2		532	60	2
516	105	2		1240	4	1
516	113	2		1240	5	1
516	121	1		1240	6	1
516	122	1		1240	7	1
516	140	1		1240	67	1
516	141	1		1240	101	1
516	142	1		1240	102	1
516	146	1		1240	122	1
516	191	2		1240	28	4
Roll #	**Frame #**	**Project Area**		**Roll #**	**Frame #**	**Project Area**
1240	31	4		1878	156	4
1240	49	4		1878	173	4
1275	16	4		1878	188	4
1275	22	4		1878	192	4
1275	57	4		1878	209	4
1275	59	4		1878	218	4
1275	61	4		1879	8	4
1275	63	4		1879	12	4
1275	65	4		1879	20	4
1275	89	1		1879	40	4
1275	102	4		1879	55	4
1276	9	1		1879	57	4
1276	10	1		1879	173	4
1276	11	1		1880	11	4
1276	17	4		1880	13	4
1276	21	4		1880	20	4
1276	23	4		1880	34	4
1276	24	4		1880	40	4
1287	12	4		1880	43	4
1287	18	4		1880	48	4
1287	81	4		1880	49	4
1296	68	4		1880	54	4
1297	210	4		1880	76	4
1297	211	4		1880	98	4
1296	75	1		1880	102	4
1297	216	1		1880	107	4
1877	26	4		1880	120	4
1877	32	4		1880	147	4
1877	37	4		1880	152	4
1877	55	4		1880	162	4
1877	61	4		1880	164	4
1877	108	4		1880	167	4
1877	109	4		1880	171	4
1877	114	4		1880	174	4
1877	126	4		1880	180	4
1877	130	4		1880	183	4
1877	132	4		1880	187	4
1877	136	4		1880	203	4
1877	179	4		1880	211	4
1877	187	4		1880	221	4
1877	204	4		1881	9	4
1878	25	4		1881	132	4
1878	60	4		1881	137	4
1878	77	4		1882	82	4
1878	84	4		1882	85	4
1878	108	4		1883	20	4
1878	111	4		1888	11	4
1878	129	4		1888	25	4
1878	141	4		1888	30	4
Roll #	**Frame #**	**Project Area**				
1888	42	4				
1889	179	4				
1889	182	4				
1890	123	4				
1890	143	4				
1894	10	4				
1895	36	4				
6201	139	1				
6352	55	1				
6352	56	1				
6354	150	1				
6354	199	1				
6354	200	1				
6355	123	1				
6356	101	1				
6356	102	1				
6359	21	1				
6359	22	1				

Appendix D. Draft Map Reviewers

Department/Reviewer	Maps Reviewed (1:100,000 scale unless otherwise noted)
Department of Fish and Game	
Dennis Becker Grizzly Island Wildlife Area 2548 Grizzly Island Road Suisun, CA 94585-9539	Napa Lodi San Francisco Stockton
Robert Huddleston Steve Bruderman Mendota Wildlife Area P.O. Box 37 4333 S. Santa Fe Grade Mendota, CA 93640	Tranquility 7.5’
Chris Rocco Upper Butte Basin Wildlife Area P.O. Box 190 Butte City, CA 95920	Chico Yuba City Willows Lakeport
Monica Parisi Region 2 1701 Nimbus Road, Suite A Rancho Cordova, CA 95670	Sacramento
Bruce Elliot Region III P.O. Box 47 Yountville, CA 94599	San Francisco Palo Alto
Kari Lewis Natural Heritage Division 1416 9th Street, 12th Floor Sacramento, CA 95814	all 1:100,000 quads Vina Plains Region
Todd Keeler-Wolf Natural Heritage Division 1416 9th Street, 12th Floor Sacramento, CA 95814	all 1:100,000 quads

Terry Roscoe Region 2 1701 Nimbus Road Rancho Cordova, CA 95670	Sacramento County
Paul Hoffman Region 2 1701 Nimbus Road Rancho Cordova, CA 95670	Glenn County Colusa County
James H. Snowden Region 2 1701 Nimbus Road Rancho Cordova, CA 95670	Butte County
Roger Scoonover Region 2 1701 Nimbus Road Rancho Cordova, CA 95670	Yolo County Solano County
Dan Gifford Region 2 1701 Nimbus Road Rancho Cordova, CA 95670	San Joaquin County
Dale Whitmore Region 2 1701 Nimbus Road Rancho Cordova, CA 95670	Sutter County Yuba County
Tim Burton Region 1 601 Locust Redding, CA 96001	Vina Plains Region
Dave Walker Region 1 601 Locust Redding, CA 96001	Vina Plains Region

John Beam Los Banos Wildlife Area 18110 West Henry Miller Los Banos, CA 93635	Visalia Delano Taft Coalinga Fresno
Rhonda Reed 1234 East Shaw Ave., Region 4 Fresno, CA 93710	Visalia Delano Taft Coalinga Fresno

Wildlife Conservation Board

Scott Clemons Marilyn Cundiff-Gee 801 K Street Suite 806 Sacramento, CA 95814	All 1:100,000 quads Vina Plains Region

Department of Water Resources

Ray McDowell Delta Planning Branch 1416 Ninth Street, Rm. 215-28 Sacramento, CA 95814	Lodi Sacramento
Kent Nelson 3251 S Street Sacramento, CA 95814	Sacramento Lodi Napa Stockton San Francisco
Brenda Grewel Environmental Assessment Section 1416 Ninth Street, Rm. 215-28 Sacramento, CA 95620	Lodi Napa

U.S. Fish and Wildlife Service

Jerry Bielfeldt 2800 Cottage Way Room E 1803 Sacramento, CA 95825	All 1:100,000 quads

Joy Albertson
San Francisco Bay National Wildlife Refuge
P.O. Box 524
Newark, CA 94560

Napa
San Francisco
Palo Alto

Dale Garrison
San Luis National Wildlife Refuge Complex
P.O. Box 2176
Los Banos, CA 93635

Merced
San Jose
Oakdale
Stockton

Nina Bicknese
Stone Lakes NWR
2233 Watt Ave., Suite 375
Sacramento, CA 95825-0509

Lodi

Greg Mensik
Sacramento National Wildlife Refuge
Route 1, Box 311
Willows, CA 95988

Moulton Weir 7.5'
Tisdale Weir 7.5'
Logandale 7.5'
Colusa 7.5'

Thomas Charmley
Kern NWRC
P.O. Box 670
Delano, CA 93616

Visalia
Delano
Taft
Coalinga
Fresno

National Biological Survey

Bill Perry
National Biological Survey
6924 Tremont Rd.
Dixon, CA 95620

Napa
San Francisco
Merced
Mendota
Fresno

U.S. Bureau of Reclamation

Bob Shaffer
2800 Cottage Way MP 152
Sacramento, CA 95825

Vina Plains Region
Visalia
Taft
Coalinga
Fresno

California Rivers Assessment

John Hunter
Division of Environmental Studies
University of California
Davis, CA 95616

Moulton Weir 7.5'
Grimes 7.5'
Tisdale Weir 7.5'
Galt 7.5'
Elk Grove 7.5'
Clarksburg 7.5'

Ducks Unlimited, Inc.

Frederic A. Reid
Ducks Unlimited, Inc.
3074 Gold Canal Drive
Rancho Cordova, CA 95670-6116

All 1:100,000 quads

Steve Donovan
Ducks Unlimited, Inc.
3074 Gold Canal Drive
Rancho Cordova, CA 95670-6116

Merced

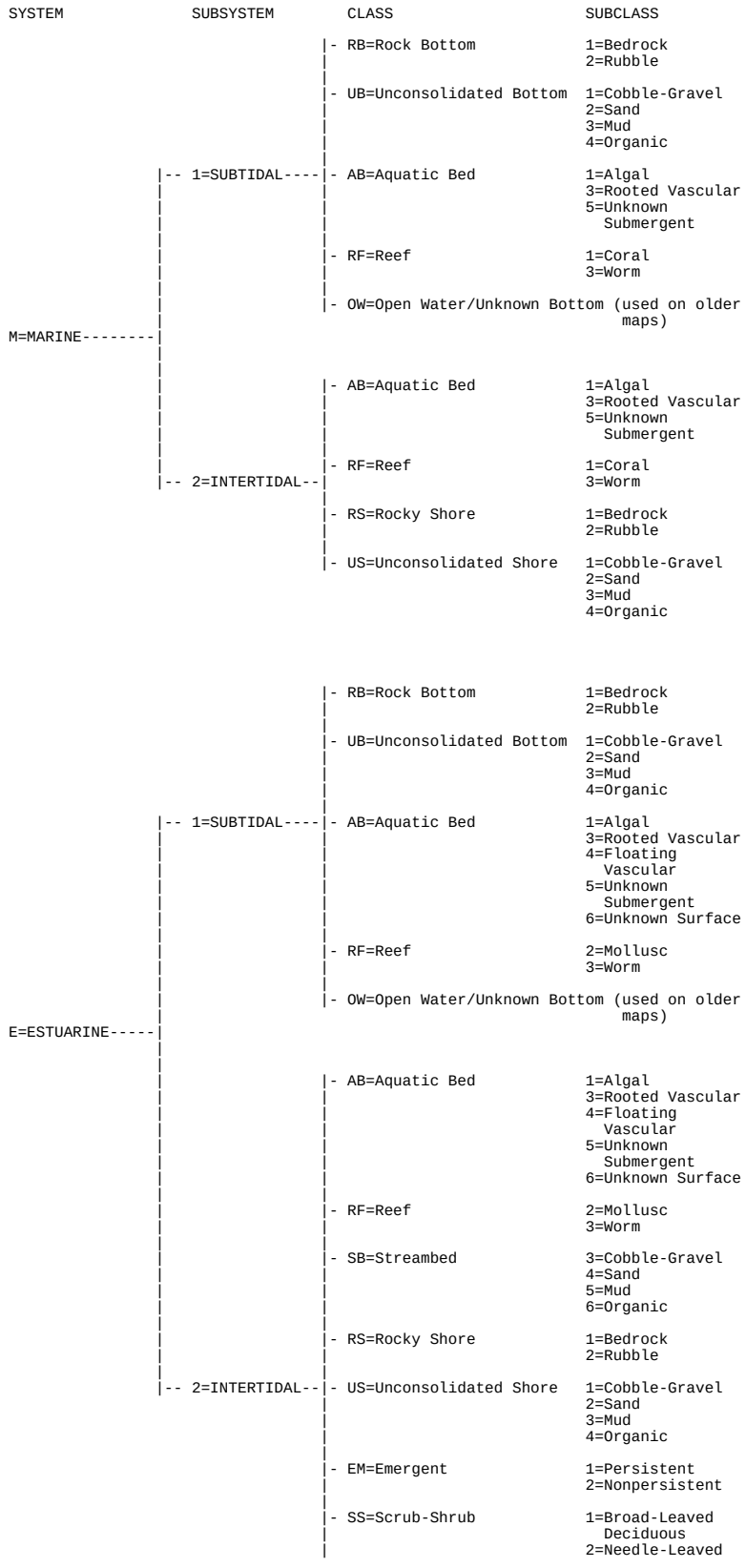
The Nature Conservancy

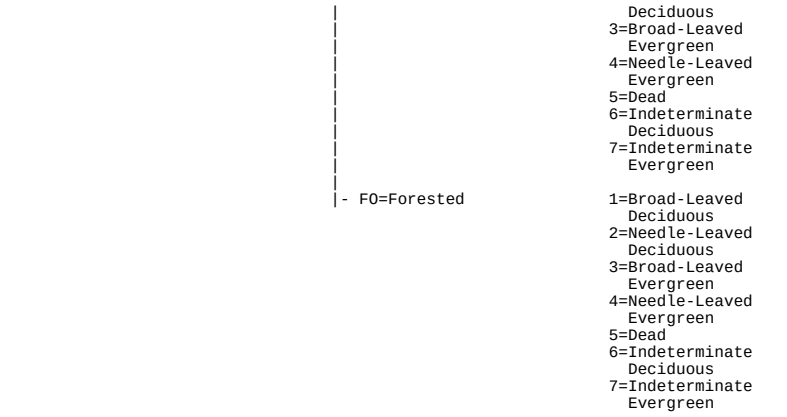
Tom Griggs
#2 Roger's Ranch Road
Hamilton City, CA 95951

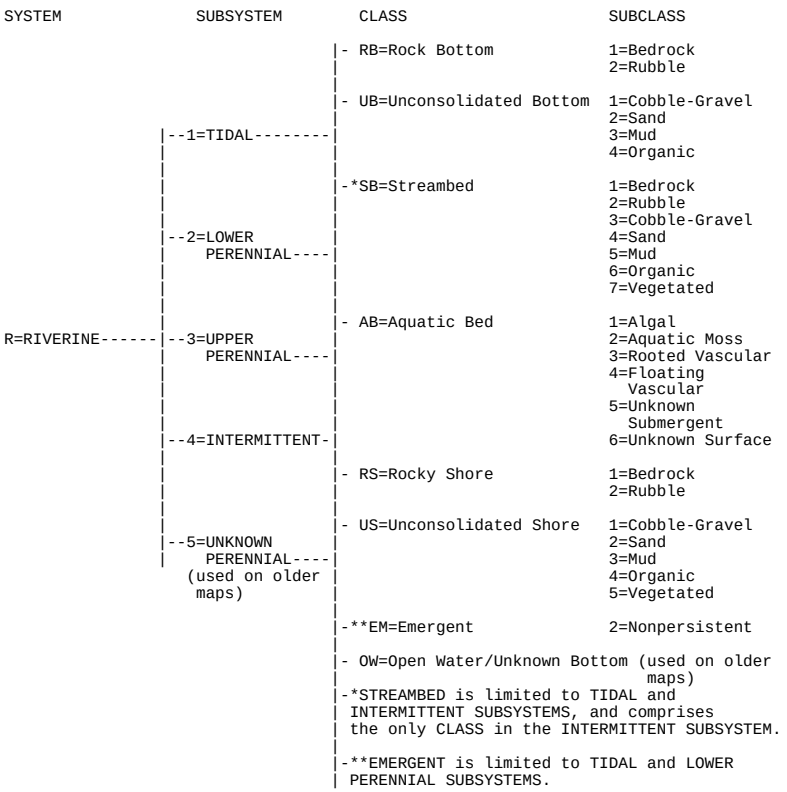
Vina Plains

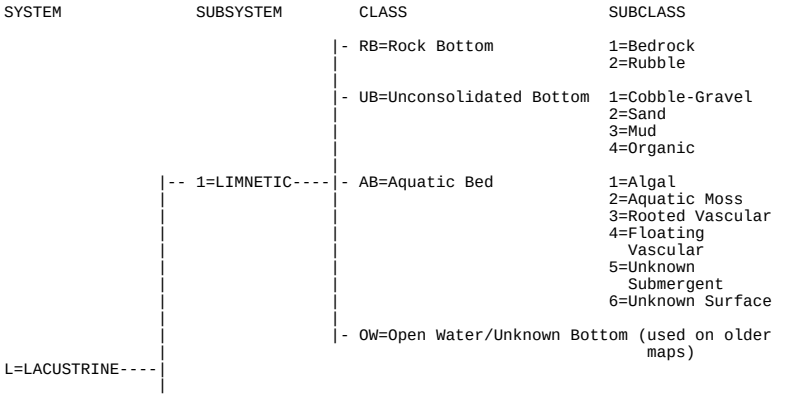
Appendix E. South Coast National Wetlands Inventory Acreage Summary

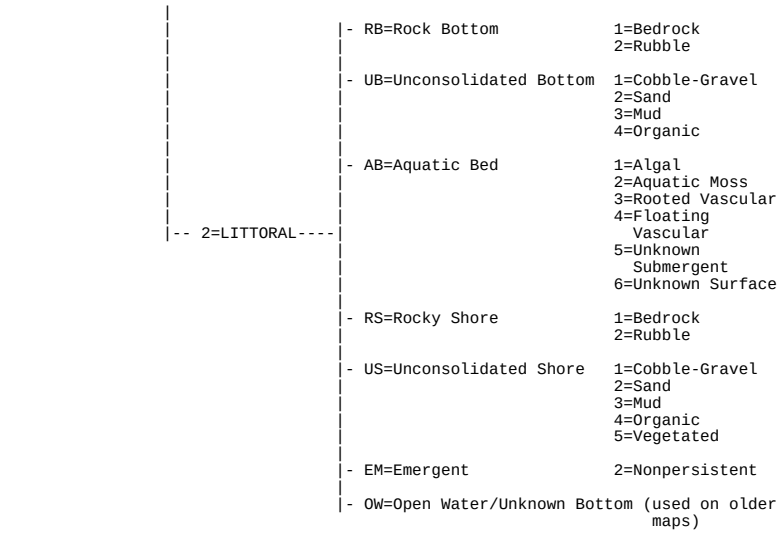
WETLANDS AND DEEPWATER HABITATS CLASSIFICATION

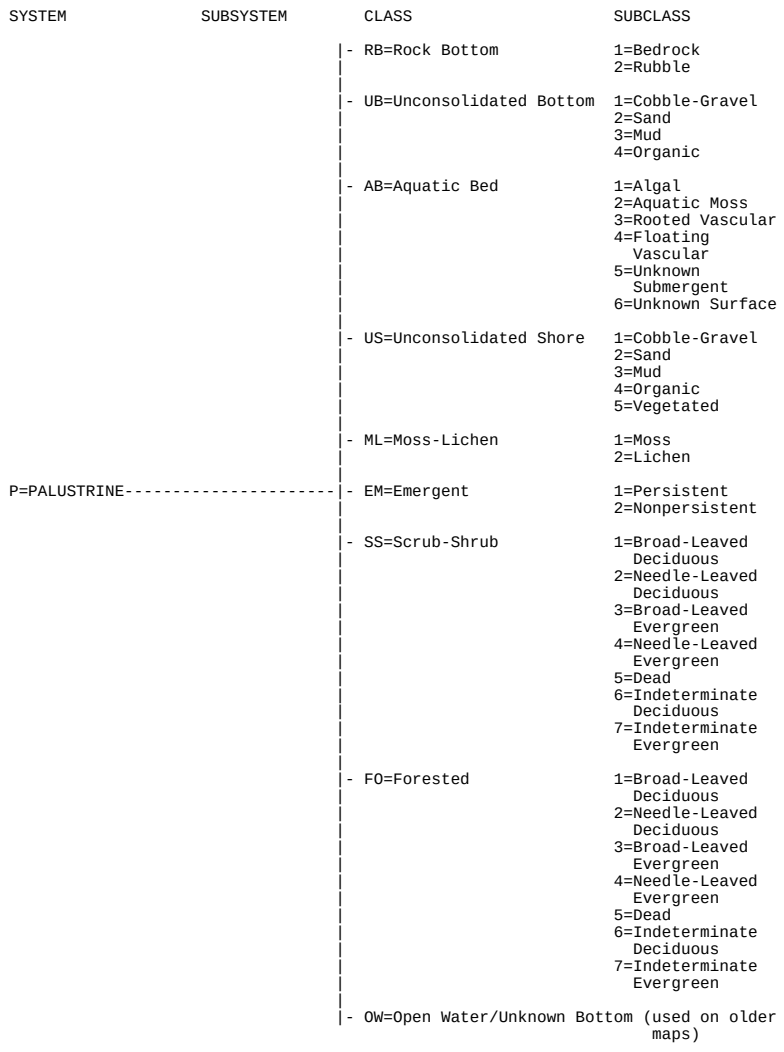



Deciduous
3=Broad-Leaved
Evergreen
4=Needle-Leaved
Evergreen
5=Dead
6=Indeterminate
Deciduous
7=Indeterminate
Evergreen
- FO=Forested
1=Broad-Leaved
Deciduous
2=Needle-Leaved
Deciduous
3=Broad-Leaved
Evergreen
4=Needle-Leaved
Evergreen
5=Dead
6=Indeterminate
Deciduous
7=Indeterminate
Evergreen


SYSTEM
SUBSYSTEM
CLASS
SUBCLASS
- RB=Rock Bottom
1=Bedrock
2=Rubble
- UB=Unconsolidated Bottom
1=Cobble-Gravel
2=Sand
3=Mud
4=Organic
--1=TIDAL--------
-*SB=Streambed
1=Bedrock
2=Rubble
3=Cobble-Gravel
4=Sand
5=Mud
6=Organic
7=Vegetated
--2=LOWER PERENNIAL----
- AB=Aquatic Bed
1=Algal
2=Aquatic Moss
3=Rooted Vascular
4=Floating Vascular
5=Unknown Submergent
6=Unknown Surface
R=RIVERINE------
--3=UPPER PERENNIAL----
--4=INTERMITTENT-
- RS=Rocky Shore
1=Bedrock
2=Rubble
- US=Unconsolidated Shore
1=Cobble-Gravel
2=Sand
3=Mud
4=Organic
5=Vegetated
--5=UNKNOWN PERENNIAL---- (used on older maps)
-**EM=Emergent
2=Nonpersistent
- OW=Open Water/Unknown Bottom (used on older maps)
-*STREAMBED is limited to TIDAL and INTERMITTENT SUBSYSTEMS, and comprises the only CLASS in the INTERMITTENT SUBSYSTEM.
-**EMERGENT is limited to TIDAL and LOWER PERENNIAL SUBSYSTEMS.


SYSTEM
SUBSYSTEM
CLASS
SUBCLASS
- RB=Rock Bottom
1=Bedrock
2=Rubble
- UB=Unconsolidated Bottom
1=Cobble-Gravel
2=Sand
3=Mud
4=Organic
-- 1=LIMNETIC----
- AB=Aquatic Bed
1=Algal
2=Aquatic Moss
3=Rooted Vascular
4=Floating Vascular
5=Unknown Submergent
6=Unknown Surface
- OW=Open Water/Unknown Bottom (used on older maps)
L=LACUSTRINE----


2=LITTORAL
RB=Rock Bottom
1=Bedrock
2=Rubble
UB=Unconsolidated Bottom
1=Cobble-Gravel
2=Sand
3=Mud
4=Organic
AB=Aquatic Bed
1=Algal
2=Aquatic Moss
3=Rooted Vascular
4=Floating Vascular
5=Unknown Submergent
6=Unknown Surface
RS=Rocky Shore
1=Bedrock
2=Rubble
US=Unconsolidated Shore
1=Cobble-Gravel
2=Sand
3=Mud
4=Organic
5=Vegetated
EM=Emergent
2=Nonpersistent
OW=Open Water/Unknown Bottom (used on older maps)


SYSTEM
SUBSYSTEM
CLASS
SUBCLASS
P=PALUSTRINE
RB=Rock Bottom
1=Bedrock
2=Rubble
UB=Unconsolidated Bottom
1=Cobble-Gravel
2=Sand
3=Mud
4=Organic
AB=Aquatic Bed
1=Algal
2=Aquatic Moss
3=Rooted Vascular
4=Floating Vascular
5=Unknown Submergent
6=Unknown Surface
US=Unconsolidated Shore
1=Cobble-Gravel
2=Sand
3=Mud
4=Organic
5=Vegetated
ML=Moss-Lichen
1=Moss
2=Lichen
EM=Emergent
1=Persistent
2=Nonpersistent
SS=Scrub-Shrub
1=Broad-Leaved Deciduous
2=Needle-Leaved Deciduous
3=Broad-Leaved Evergreen
4=Needle-Leaved Evergreen
5=Dead
6=Indeterminate Deciduous
7=Indeterminate Evergreen
FO=Forested
1=Broad-Leaved Deciduous
2=Needle-Leaved Deciduous
3=Broad-Leaved Evergreen
4=Needle-Leaved Evergreen
5=Dead
6=Indeterminate Deciduous
7=Indeterminate Evergreen
OW=Open Water/Unknown Bottom (used on older maps)

MODIFIERS

U = Uplands

Summary of South Coast Wetland Acreages By Sub-System and Class

	SUMMARY - WETLANDS				Wetland Class									
		OW	UB	US	RS	SB	BB	FL	F	AB	EM	SS	FO	
		Open Water	Unconsolidated Bottom	Unconsolidated Shore	Rocky Shore	Stream Bed		Flats	Farmed	Aquatic Bed	Emergents	Scrub Shrub	Forest	**Sub-system Total**
	Wetland Subsystem													
M1	Marine Subtidal	1286591.8	300538.5							14035.0				**1587130.3**
M2	Marine Intertidal			927.1	924.5		5366.9	17.3						**7235.8**
E1	Estuarine Subtidal	7672.8	14729.4											**22402.2**
E2	Estuarine Intertidal		2.9	1093.4			49.1	1023.3		1032.5	6996.3	9.5		**2168.7**
P	Palustrine	1593.5	2163.2	899.4				124.1	22.3	71.3	18043.7	6121.7	13985.6	**4802.4**
R1	Riverine Tidal	138.8	35.0					55.8						**229.6**
R2	Riverine Lower Perennial	107.2	208.7	209.6		590.5		268.6						**1384.6**
R4	Riverine Intermittent					5855.5		219.3						**6074.8**
L1	Lacustrine Limnetic	1471.8	24425.6											**25897.4**
L2	Lacustrine Littoral	32.5	2073.1	3178.2				152.8		144.8	32.0			**5436.6**
	Class Total	**1297608.4**	**344176.2**	**6307.8**	**924.5**	**6446.0**	**5416.0**	**1861.1**	**22.3**	**15283.5**	**25072.0**	**6131.2**	**13985.6**	**1723234.5**
	SUMMARY- ALL	**ACRES**												
	Wetlands	1723234.5												
	Uplands	4443786.3												
	No Data (quads not availabl	148303.9												
	Total	**6315324.8**												

National Wetlands Inventory Data – Summary of Acreages for South Coast Area

NO. POLYGONS	NWI CLASS1	NWI CLASS	ACRES
1	E1OW	E1OWK	6.01
1	E1OW	E1OWKL	34.61
58	E1OW	E1OWL	7623.84
1	E1OW	E1OWM	8.31
61	**E1OW Total**	**E1OW Total**	**7672.77**
1	E1UB	E1UBKL	30.96
50	E1UB	E1UBL	14686.17
3	E1UB	E1UBLx	12.25
54	**E1UB Total**	**E1UB Total**	**14729.38**
1	E2QB	E2ABM	1032.45
1	**E2QB Total**	**E2AB Total**	**1032.45**
3	E2BB	E2BBN	49.07
3	**E2BB Total**	**E2BB Total**	**49.07**
2	E2EM	E2EM/FLN	59.99
3	E2EM	E2EM/FLP	80.58
2	E2EM	E2EM/USN	36.05
1	E2EM	E2EMKN	5.40
135	E2EM	E2EMN	3132.11
197	E2EM	E2EMP	3682.11
340	**E2EM Total**	**E2EM Total**	**6996.25**
2	E2FL	E2FLKN	332.58
13	E2FL	E2FLM	94.94
21	E2FL	E2FLN	313.16
25	E2FL	E2FLP	282.62
61	**E2FL Total**	**E2FL Total**	**1023.29**
1	E2SS	E2SSP	9.46
1	**E2SS Total**	**E2SS Total**	**9.46**
1	E2UB	E2UBL	2.92
1	**E2UB Total**	**E2UB Total**	**2.92**
6	E2US	E2USM	200.33
89	E2US	E2USN	354.99
127	E2US	E2USP	538.12
222	**E2US Total**	**E2US Total**	**1093.43**
15	L1OW	L1OWKZ	1121.10
11	L1OW	L1OWZ	350.75
26	**L1OW Total**	**L1OW Total**	**1471.84**
5	L1UB	L1UBFh	22.94
4	L1UB	L1UBH	15809.10
41	L1UB	L1UBHh	8558.85
1	L1UB	L1UBHx	34.66
51	**L1UB Total**	**L1UB Total**	**24425.55**
6	L2AB	L2ABHh	144.77
6	**L2AB Total**	**L2AB Total**	**144.77**
2	L2EM	L2EMHh	32.03
2	**L2EM Total**	**L2EM Total**	**32.03**
1	L2FL	L2FLK	103.81
1	L2FL	L2FLKY	43.37

1	L2FL	L2FLKY	43.37
1	L2FL	L2FLW	5.58
3	**L2FL Total**	**L2FL Total**	**152.76**
1	L2OW	L2OWZ	32.50
1	**L2OW Total**	**L2OW Total**	**32.50**
1	L2UB	L2UBFh	1135.33
5	L2UB	L2UBK1h	937.79
6	**L2UB Total**	**L2UB Total**	**2073.12**
7	L2US	L2US	179.84
2	L2US	L2USAh	15.10
37	L2US	L2USCh	814.37
5	L2US	L2USJ	2029.41
2	L2US	L2USK1h	139.47
53	**L2US Total**	**L2US Total**	**3178.19**
70	M1AB	M1ABL	14034.96
70	**M1AB Total**	**M1AB Total**	**14034.96**
73	M1OW	M1OWL	1286591.83
73	**M1OW Total**	**M1OW Total**	**1286591.83**
13	M1UB	M1UBL	300538.45
13	**M1UB Total**	**M1UB Total**	**300538.45**
97	M2BB	M2BBN	3858.77
50	M2BB	M2BBP	1508.14
147	**M2BB Total**	**M2BB Total**	**5366.91**
1	M2FL	M2FLN	17.28
1	**M2FL Total**	**M2FL Total**	**17.28**
336	M2RS	M2RSN	865.48
16	M2RS	M2RSP	59.02
352	**M2RS Total**	**M2RS Total**	**924.50**
37	M2US	M2USN	898.58
4	M2US	M2USP	28.55
41	**M2US Total**	**M2US Total**	**927.13**
7	OUT	OUT	148303.89
7	**OUT Total**	**OUT Total**	**148303.89**
2	PAB	PABF	2.25
44	PAB	PABFh	44.02
8	PAB	PABFx	3.11
1	PAB	PABH	0.37
8	PAB	PABHh	16.92
3	PAB	PABHx	2.98
1	PAB	PABKHx	1.64
67	**PAB Total**	**PAB Total**	**71.29**
1	PEM	PEM/FLKY	5.36
2	PEM	PEM/FLW	72.33
6	PEM	PEM/FLYh	1033.70
1	PEM	PEM/OWF	3.91
2	PEM	PEM/OWY	120.98
1	PEM	PEM/SSA	4.20
1	PEM	PEM/SSC	4.77

1	PEM	PEM/SSC	4.77
1	PEM	PEM/SSCh	0.95
2	PEM	PEM1Ch	0.58
1	PEM	PEM1Fh	0.29
1	PEM	PEM1Fx	0.48
643	PEM	PEMA	4389.60
58	PEM	PEMA/U	1594.34
1	PEM	PEMAd	1.13
148	PEM	PEMAh	1088.53
6	PEM	PEMAx	10.11
3	PEM	PEMB	1.83
681	PEM	PEMC	3469.79
335	PEM	PEMCh	702.02
30	PEM	PEMCx	32.96
132	PEM	PEMF	275.98
267	PEM	PEMFh	497.59
42	PEM	PEMFx	63.46
1	PEM	PEMJ	1.35
2	PEM	PEMKFx	5.84
4	PEM	PEMKW	3.53
20	PEM	PEMKY	682.51
1	PEM	PEMKZ	4.82
9	PEM	PEMR	183.64
2	PEM	PEMU	9.65
53	PEM	PEMW	473.36
295	PEM	PEMY	2472.84
3	PEM	PEMYh	17.13
7	PEM	PEMYx	641.22
10	PEM	PEMZ	172.93
2772	**PEM Total**	**PEM Total**	**18043.73**
1	PF	PF	22.33
1	**PF Total**	**PF Total**	**22.33**
3	PFL	PFLKW	3.06
8	PFL	PFLKY	19.08
26	PFL	PFLW	93.00
4	PFL	PFLY	8.96
41	**PFL Total**	**PFL Total**	**124.10**
6	PFO	PFO/EMW	59.26
7	PFO	PFO/EMY	45.79
6	PFO	PFO/SSW	352.88
2	PFO	PFO/SSY	39.74
348	PFO	PFOA	1283.02
19	PFO	PFOAh	24.52
1	PFO	PFOAx	2.86
613	PFO	PFOC	3590.02
119	PFO	PFOCh	219.80
3	PFO	PFOCx	7.10
1	PFO	PFOF	0.32

1	PFO	PFOF	0.32
17	PFO	PFOJ	139.86
1	PFO	PFOJh	2.12
1	PFO	PFOR	54.53
1	PFO	PFOS	4.35
97	PFO	PFOW	7524.64
57	PFO	PFOY	634.76
1299	**PFO Total**	**PFO Total**	**13985.55**
2	POW	POWH	1.56
14	POW	POWK	26.46
5	POW	POWKW	10.46
202	POW	POWKY	545.44
155	POW	POWKZ	473.87
1	POW	POWV	5.77
1	POW	POWW	0.56
45	POW	POWY	102.71
1	POW	POWYh	45.59
2	POW	POWYx	1.63
103	POW	POWZ	371.32
1	POW	POWZK	6.01
1	POW	POWZx	2.06
533	**POW Total**	**POW Total**	**1593.45**
3	PSS	PSS	29.35
6	PSS	PSS/EMC	39.47
2	PSS	PSS/EMCh	9.34
1	PSS	PSS/EMFh	0.79
1	PSS	PSS/EMR	25.93
17	PSS	PSS/EMW	598.24
30	PSS	PSS/EMY	279.83
1	PSS	PSS/FLY	10.39
333	PSS	PSSA	1357.10
22	PSS	PSSAh	22.75
15	PSS	PSSAx	17.23
800	PSS	PSSC	2396.91
252	PSS	PSSCh	404.34
42	PSS	PSSCx	52.07
10	PSS	PSSFh	6.20
52	PSS	PSSJ	119.85
1	PSS	PSSJh	2.32
1	PSS	PSSKY	2.48
4	PSS	PSSR	39.68
2	PSS	PSSS	5.53
31	PSS	PSSW	412.65
23	PSS	PSSY	289.26
1649	**PSS Total**	**PSS Total**	**6121.72**
27	PUB	PUBF	41.51
754	PUB	PUBFh	379.26
1	PUB	PUBFrx	5.75

1	PUB	PUBFrx	5.75
215	PUB	PUBFx	98.48
5	PUB	PUBH	19.91
408	PUB	PUBHh	804.52
1	PUB	PUBHrx	1.52
369	PUB	PUBHx	730.36
1	PUB	PUBKFx	3.14
15	PUB	PUBKHx	69.02
1	PUB	PUBKh	3.48
6	PUB	PUBKrx	0.99
6	PUB	PUBKx	5.21
1809	**PUB Total**	**PUB Total**	**2163.15**
39	PUS	PUSA	114.03
239	PUS	PUSAh	174.81
40	PUS	PUSAx	54.32
36	PUS	PUSC	45.88
392	PUS	PUSCh	316.19
1	PUS	PUSChs	28.17
60	PUS	PUSCx	87.69
1	PUS	PUSJ	1.08
17	PUS	PUSJh	8.97
16	PUS	PUSJx	12.54
7	PUS	PUSKCx	47.66
6	PUS	PUSKx	8.07
854	**PUS Total**	**PUS Total**	**899.41**
2	R1FL	R1FLR	55.75
2	**R1FL Total**	**R1FL Total**	**55.75**
6	R1OW	R1OWV	121.27
1	R1OW	R1OWZ	17.57
7	**R1OW Total**	**R1OW Total**	**138.84**
1	R1UB	R1UBV	34.99
1	**R1UB Total**	**R1UB Total**	**34.99**
1	R2FL	R2FLKY	1.00
6	R2FL	R2FLW	93.57
8	R2FL	R2FLY	171.04
1	R2FL	R2FLZ	3.00
16	**R2FL Total**	**R2FL Total**	**268.60**
1	R2OW	R2OWY	33.56
2	R2OW	R2OWZ	73.61
3	**R2OW Total**	**R2OW Total**	**107.17**
6	R2SB	R2SBY	403.97
3	R2SB	R2SBYx	186.56
9	**R2SB Total**	**R2SB Total**	**590.53**
21	R2UB	R2UBH	197.15
1	R2UB	R2UBHx	2.59
1	R2UB	R2UBZ	8.92
23	**R2UB Total**	**R2UB Total**	**208.65**
6	R2US	R2USA	28.16

6	R2US	R2USA	28.16
70	R2US	R2USC	181.48
76	**R2US Total**	**R2US Total**	**209.64**
21	R4FL	R4FLW	218.02
1	R4FL	R4FLY	1.32
22	**R4FL Total**	**R4FL Total**	**219.34**
262	R4SB	R4SBA	1146.21
1	R4SB	R4SBAx	5.86
122	R4SB	R4SBC	902.17
20	R4SB	R4SBCx	78.42
2	R4SB	R4SBF	23.18
2	R4SB	R4SBFx	12.70
129	R4SB	R4SBJ	3430.47
1	R4SB	R4SBW	191.23
2	R4SB	R4SBY	65.21
541	**R4SB Total**	**R4SB Total**	**5855.45**
2013	U	U	4442906.23
64	U	U/PEMA	880.11
2077	**U Total**	**U Total**	**4443786.33**
13290	**Grand Total**	**Grand Total**	**6313841.89**

Appendix F. California Wetland and Riparian GIS Acreage Summary

Wetland and Riparian Gis
Acreage Summary by Central Valley Habitat Joint Venture Basins
12/8/96

Value	Class Name	Butte	Colusa	Sutter	American	Yolo	Suisun	Delta	San Joaquin	Tulare Lake	Total by Class
1	Open Water	10458.8	10009.8	4470.6	7104.9	6048.0	34947.6	59413.9	31962.2	24282.9	**188698.6**
2	Seasonally Flooded Estuarine Emergents	0.0	0.0	0.0	0.0	299.1	10804.6	0.0	0.0	0.0	**11103.7**
3	Permanently Flooded Estuarine Emergents	0.0	0.0	0.0	0.0	1219.2	22667.8	2.9	0.0	0.0	**23889.9**
4	Tidal Estuarine Emergents	0.0	0.0	0.0	0.0	409.2	9010.8	906.7	0.0	0.0	**10326.7**
5	Seasonally Flooded Palustrine Emergents	13890.6	16305.8	2703.0	4147.7	5947.5	1375.7	6214.4	36287.8	12561.5	**99433.9**
6	Permanently Flooded Palustrine Emergents	8344.9	5124.0	2266.4	2899.6	3950.6	2748.4	10573.3	15633.3	10349.8	**61890.3**
7	Tidal Flats	0.0	0.0	0.0	0.0	0.0	27.1	2.0	0.0	0.0	**29.1**
8	Non-Tidal Flats	1065.1	2997.9	138.1	309.8	435.2	171.9	650.3	46.3	0.0	**5814.5**
9	Flooded Agriculture	52947.6	14058.3	8406.1	14790.2	2773.9	0.0	2465.7	851.3	46676.5	**142969.5**
10	Seasonally Flooded Agriculture	103735.5	187396.9	84815.5	102416.0	48904.2	0.0	34429.6	63244.9	86724.5	**711667.1**
11	Non-Flooded Agriculture	82113.8	242160.4	60607.1	60619.3	136044.1	71.8	521174.7	475583.5	825006.3	**2403381.0**
12	Orchards / Vineyards	77649.0	54478.3	23632.6	24900.0	15428.2	0.0	155926.7	368676.9	279105.3	**999797.0**
13	Riparian Woody	14288.0	9682.4	2412.8	8883.3	1855.0	64.3	13121.8	9838.5	1399.3	**61545.4**
14	Non-Riparian Woody	21751.1	3770.3	1513.8	44260.4	5178.9	232.6	22513.9	4501.3	7312.3	**111034.7**
15	Grass	154092.8	220989.9	15297.7	245983.1	172159.3	27165.8	623569.1	604835.2	600009.0	**2664101.9**
16	Barren	37146.4	157881.3	28929.8	41972.2	104464.7	1581.5	70336.9	244806.9	368965.3	**1056084.9**
17	Other	13377.3	11923.7	5830.3	48847.3	27645.5	9821.6	124621.0	106875.5	48868.4	**397810.6**
	Total by CVHJV Basin	**590860.8**	**936778.9**	**241023.7**	**607133.7**	**532762.7**	**120691.5**	**1645922.9**	**1963143.5**	**2311261.2**	**8949578.9**

Note: San Francisco Bay area acreages not included.

Wetland and Riparian GIS

Acreage by Project Area

12/8/96

		Sac Valley	Bay/Delta	N. San Joaquin	S. San Joaquin	Vina Plains	
Value	**Class Name**	**Area 1**	**Area 2**	**Area 3**	**Area 4**	**Area 4b**	**Total by Class**
1	Open Water	35,441.1	396,372.2	36,923.6	20,491.9	4,973.2	**494,201.9**
2	Seasonally Flooded Estuarine Emergents	1,860.6	9,359.5	0.0	0.0	0.0	**11,220.1**
3	Permanently Flooded Estuarine Emergents	5,407.1	20,206.1	0.0	0.0	0.0	**25,613.2**
4	Tidal Estuarine Emergents	1,607.0	30,525.9	0.0	0.0	0.0	**32,133.0**
5	Seasonally Flooded Palustrine Emergents	42,860.6	10,020.5	42,251.7	6,543.1	500.4	**102,176.3**
6	Permanently Flooded Palustrine Emergents	22,520.8	19,791.6	17,917.0	7,731.1	794.4	**68,755.0**
7	Tidal Flats	0.2	1,329.9	0.0	0.0	0.0	**1,330.1**
8	Non-Tidal Flats	3,186.9	6,438.3	0.0	0.0	1,678.2	**11,303.4**
9	Flooded Agriculture	91,967.4	2,421.2	860.4	46,767.4	991.2	**143,007.8**
10	Seasonally Flooded Agriculture	526,369.6	33,398.8	76,106.9	75,874.1	1,520.1	**713,269.5**
11	Non-Flooded Agriculture	568,283.9	543,812.3	586,587.7	736,257.8	31,383.5	**2,466,325.2**
12	Orchards/Vineyards	139,302.2	227,872.6	456,377.2	168,883.9	56,748.5	**1,049,184.4**
13	Riparian Woody	27,949.5	24,644.7	8,721.0	1,320.1	9,779.4	**72,414.7**
14	Non-Riparian Woody	76,251.5	193,421.2	4,975.9	6,522.8	4,677.0	**285,848.3**
15	Grass	734,958.8	1,020,704.8	674,582.1	549,956.1	94,280.6	**3,074,482.3**
16	Barren	355,467.5	92,274.8	318,803.2	305,817.4	18,980.3	**1,091,343.2**
17	Other	113,989.4	444,186.4	126,912.4	28,211.3	7,237.8	**720,537.3**
	Total by Project Area	**2,747,424.2**	**3,076,780.8**	**2,351,019.2**	**8,175,224.2**	**233,544.6**	**10,363,145.8**